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THE ABBEY NATURE BOOKS

BRITISH MAMMALS

BY
W. PERCIVAL WESTELL, F.L.S.

By the
forgetful
waters
then
I
will
not
forget
thee
O. Iris.

ALFRED G.
de Lury

A. S. Carter

THE ABBEY NATURE BOOKS
Edited by W. PERCIVAL WESTELL, F.L.S.

BRITISH MAMMALS



THE ABBEY NATURE BOOKS

Coloured Plate and many Black and White Illustrations.

BRITISH MAMMALS.

BRITISH BIRDS (Double Volume).

BRITISH REPTILES, AMPHIBIANS, AND FRESH-WATER FISHES.

BRITISH BUTTERFLIES AND MOTHS.

BRITISH INSECTS (General).

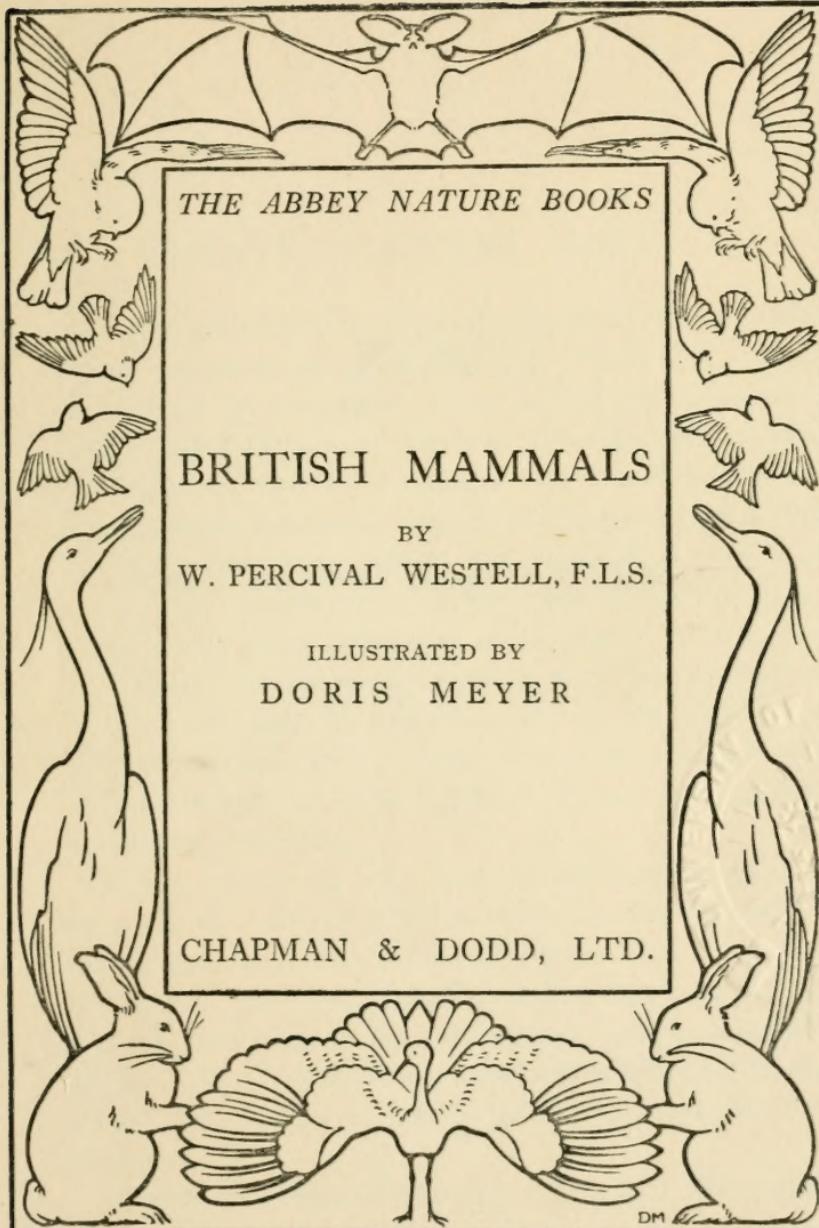
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BRITISH MAMMALS
Harvest Mouse, Nest, and Young.
Dormouse (with nut).



THE ABBEY NATURE BOOKS

BRITISH MAMMALS

BY

W. PERCIVAL WESTELL, F.L.S.

ILLUSTRATED BY
DORIS MEYER

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INTRODUCTORY NOTE

THIS little volume is the first of a series of Nature books whose object is to set before the reader the salient features of our commoner forms of British animal life. Whilst classification has not been lost sight of, the aim has been to treat in a popular way the life-histories of the animals dealt with, and not to burden the would-be enquirer with long words and unfamiliar technical terms. The employment of these has in the past prevented many young (and even older) people from taking up with seriousness the study of Natural Science, and in an age which calls for some respite from the busy world in which we live, it is essential that those who are thus inclined should be encouraged to pursue the manifold operations of Nature.

Those among us who have lived long enough to recognise the value of such fascinating studies realise how important it is to offer encouragement to all those willing to observe and record simple country happenings and delights, and if these modest volumes help to stimulate interest and prove of service in affording information, the personal effort that is sure to follow will bring its own reward.

During the course of a lengthy article, *The Times* made

INTRODUCTORY NOTE

a bold and up-to-date plea for due recognition of what it rightly called "National Nature-Study," and in the course of a most able contribution concluded as follows :

" It is no good teaching a lad the anatomy of a Frog by blackboard and text-book unless, and until, his curiosity has been aroused by observation of the Frog itself. He will forget it as soon as he enters the play-ground, or when his whole energies are set upon earning a living for himself. But teach him to read, mark, learn, and inwardly digest the book of Nature at first hand, and, even though he forget the substance of his lesson, he will have acquired acumen which, in whatever walk of life he selects, will be to him and to the State an asset of inestimable worth. The boy scout of Nature is the successful soldier, citizen, merchant, and adventurer of the future. His success must be achieved not by the destruction of Nature and Nature's sanctuaries. Let it be borne in upon him that Nature's sanctuaries and all that they contain and retain are to be cherished and preserved as part of his own goodly heritage as heir of all the ages."

It may here be remarked that, bearing in mind what is written above, the object of this new series of Nature Books is not so much to "teach," as to *direct and impart* useful and interesting information, with the idea that, aided by simple illustrations, the reader, be he young or old, boy or girl, will be so smitten with the desire to learn as to carry out observations of their own accord.

So many links in the great chain of life are missing

INTRODUCTORY NOTE

that, to search for and discover even a few of these, will bring its own reward to the diligent observer and seeker after knowledge.

Whilst so many real and so-called Nature Books have been issued during the last decade—a testimony, if such were needed, of the growing interest taken in creatures of the wild—there is room, it is believed, for a well-planned series of volumes such as “The Abbey Nature Books,” the first of which are confidently offered to the Nature-loving public in the hope that the efforts made to present the best possible, both pictorially and textually, will meet with encouragement and support.

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FLYING MAMMALS

I. ORDER CHIROPTERA, OR BATS

Introduction.--British mammals are divided into seven Orders, commencing with the Bats and ending with the Whales, and it is our purpose in this volume to set out the chief features of the commoner species, and to include some notes of interest concerning the rarer forms. This is made possible, because Great Britain is by no means rich in its mammalian fauna. Consequently, we are in the happy position of including practically the whole of the mammals on the British list. With other sections of animal life it is only possible, in the space at disposal, to make a representative selection, but when it is stated that, within the confines of a small parish not many miles from London, we have discovered more species of mammals than occur in the whole of Ireland, some idea will be gained of the small number of different species of animals claiming a place in our fauna which, as their name indicates, possess mammae, or teats, with which to suckle their young.

In the *Oxford Survey of the British Empire* not the

least interesting chapters are those devoted to the fauna, from which the following extract dealing with home mammals is taken :

“ Great Britain has some forty species of land mammals as against Germany’s ninety and Scandinavia’s sixty, while Ireland has only twenty-two. In Reptiles and Amphibians a small country like Belgium has about twenty-two species, while Great Britain has thirteen, and Ireland only four, of which none are Snakes. This extreme poverty has been accounted for by the destruction caused by the glacial epoch during Pleistocene times, and to some extent by the subsidence and flooding of the country which occurred during this epoch.

“ In the brick-earths and cavern-deposits of Britain, which were probably formed in an inter-glacial period, we find a strange mixture of mammalian remains which do not give any clear evidence as to the nature of the climate when they were deposited. Of these animals, the Reindeer, Arctic Fox, and Musk-Ox suggest an Arctic climate, while the Hippopotamus, Sabre-toothed Tiger, Lion, and Hyæna are equally suggestive of a tropical one. The variety of the British fauna at this time was further reinforced by the occurrence of Bears, the Glutton, the Woolly Rhinoceros, the Aurochs, Bison, Saiga Antelope, and two species of Elephant (*Elephas primigenius*), and the Straight-tusked Elephant (*E. antiquus*).

“ The existing mammalian fauna comprises Bats

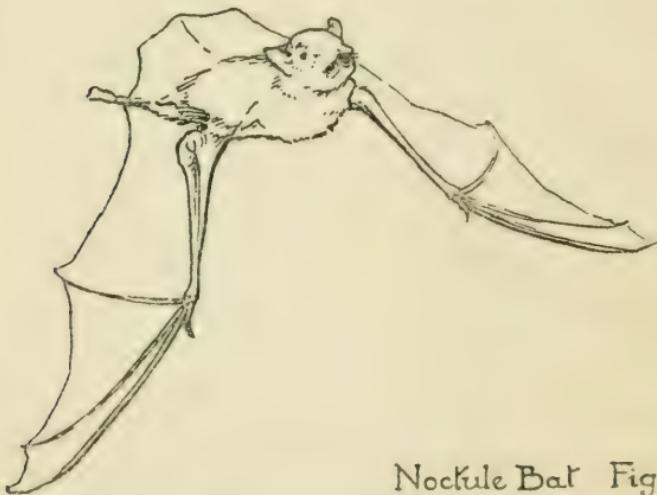
BATS

(twelve species), the Hedgehog, Mole, Shrews (three species), Wild Cat, Fox, Pine-Marten, Polecat, Stoat, Weasel, Badger, Otter, Squirrel, Mice (five species), Black and Brown Rat, Voles (three species), Common and Mountain Hare, Rabbit, Red Deer, Fallow Deer, and Roe Deer. Ireland has only six species of Bats, and lacks the Mole, Common and Water Shrew, Wild Cat, Polecat, Weasel, Dormouse and Harvest Mouse, the Voles, the Common Hare, and the Roe Deer. The Wild Cat is now on the verge of extinction, and the Pine-Marten and Polecat are equally rare."

Coming directly to those weird flying mammals, the Bats, it is astonishing to notice the ignorance which still prevails concerning them; and even in country districts, where the average person of intelligence should be acquainted with them, we have often heard the most extravagant notions expressed as to the life and habits of these haunters of the silences. That Bats produce their young alive, and suckle their young, deserves emphasis thus early in our story. Being, as a general rule, creatures of the night, living exclusively upon an insect diet, consisting of beetles, moths, and other insects which are captured on the wing, and mostly hiding their sombre forms in barns, church-towers, ruins, caves, quarries, hollow trees and other retreats by day, small wonder need be expressed at the amount of ignorance that is still rife. There is, too, an existent prejudice associated with these "Flitter Mice," as the country people call them, which, as with Snakes, Lizards, Earthworms, Centipedes,

BRITISH MAMMALS

and other animals, makes them unpopular with the average individual. This is all the more regrettable because Bats do not, as they say in Scotland, harm beast or body. On the other hand, they are distinctly useful creatures in the economy of life, and should receive every encouragement it is within our means to bestow upon them.



Noctule Bat Fig 1

Noctule Bat.—The Noctule Bat (Fig. 1) is one of the three most familiar British species, and, by reason of its size, it is also known as the Great Bat, the wing-stretch extending several inches. It has broad, rounded ears, which occupy a position on the extreme corners of the head, with the upper parts of the body yellowish-brown, and a fainter tinge underneath. Bats that inhabit our own country are mostly gregarious, and the Noctule is no exception

NOCTULE BAT

to this rule. Where Bats congregate, especially in Winter, when, with the exception of the Pipistrelle and perhaps one or two others, they hibernate, or lay up for several months in a state of suspended animation, large numbers may be found together. They cling to one another by means of the sharp "claws," evidently firm believers in the motto that "Union is strength." Upon the ground they are awkward and ungainly, shuffling along in a cumbersome way unpleasant to witness. The air is their home, and in this respect they strikingly remind one of the Swift, a bird which, owing to the shortness of its legs and the long, sickle-shaped wings, is often unable to rise when once it finds itself upon the ground.

Possessed of wonderful powers of endurance upon the wing, darting hither and thither unceasingly in the gathering gloom; keen-eared and maybe keen-scented, with sensitive, membranous wings, situated upon a framework which may be likened to the ribs of an umbrella, the Bat is admirably fashioned for the work it performs with such unerring vigilance. It needs an attentive ear to catch the weak note uttered by a Bat when it flits rapidly past, but the tree-loving Noctule is not so difficult to hear, as it emits a shrill sound when pursuing its airy pilgrimage. As one watches it just before dusk, flying on a warm Summer's evening in search of cockchafers and other night-flying insects, a series of remarkable evolutions are displayed of never-ending interest to the zealous student of wild life. Chief

among these exploits in mid-air are the power upon the wing, the sudden hovering like a bird of prey (such as the Kestrel), and an unexpected falling motion of several inches which is due to the creature having caught its prey, and requiring the use of its "thumb" to adjust the tit-bit that has been secured. It has strong jaws and a broad muzzle, both well calculated to aid the Noctule in obtaining its living, and to see several of these winged creatures hawking together at nightfall is an experience not easily forgotten.

Pipistrelle Bat.—Claiming kinship with the same genus, *Vesperugo*, the little Pipistrelle next courts our attention. This species is easily the best known, and as it is a day-flier as well as a night-prowler, the observer is more likely to be conversant with it. We have seen it insect-hunting on a mild, sunny day in December, and sometimes in the early Spring, when two or three are observed scouring the surface of a wayside pond for food, we have frequently mistaken the flying mammal for that welcome harbinger of Summer, the fairy-like Swallow. The Pipistrelle has a wing-stretch of about eight inches. The fur is long and silky, reddish-brown above and dusky below. This species is a familiar inhabitant of the whole of Europe, and also extends into the temperate parts of Asia and Northern Africa. It comes from its Winter retreat earlier than any other British Bat, and also frequents dwellings to a far greater extent than any of its relatives. It is a swift flier, with quick movement of wing, turning and twisting with

SEROTINE BAT

great rapidity in search of prey, which, it is believed, mostly consists of gnats. It is probable that its excursions are for this reason frequently undertaken in the neighbourhood of water, where the insects in question delight to congregate.

Serotine Bat.—The third British Bat belonging to the same genus as the two already dealt with, is the



Serotine (Fig. 2), but it is decidedly local in distribution, and the rarest of the three. It possesses broad, round tips upon the moderate-sized ears, with a fur of chestnut-brown above and yellowish-grey below. This species, however, is subject to colour variation, although the long, silky hair and almost black wing-membranes, are present in all specimens observed. The Serotine needs special mention from the point of view that it is the most widely distributed of any known species of Bat, and, moreover,

it is the only Bat which is found in both the eastern and western hemispheres. It is worthy of note that, although possessed of the power of flight, Bats do not invade a wider range of territory than they are known to occupy, more especially when one remembers the wide citizenship enjoyed by the one species now under review. These problems of animal distribution are of intense interest, and a special study is open to those who are smitten with a desire to concentrate attention upon the entrancing subject of the geographical range of animals, furred, feathered, and otherwise.

The Serotine steals from its hibernating quarters in late Spring, and it is a solitary species possessed of slow, hesitating flight. As its name indicates, it is associated in our minds with the shades of night, when the magic love-chant of the Nightingale is heard at its best, and the churring warble of a restless Nightjar floats soothingly adown the vale. In consequence of this late appearance upon the wing, it is difficult to get a good sight of this large Bat, unless the observer is willing to undertake an all-night watch, as the Serotine hunts right through the silent hours, and does not cease its labours until dawn breaks the following morning. Then a chance is afforded of watching its movements more closely than is otherwise possible.

It is an inhabitant of the southern parts of our island, and appears to show a partiality for tall trees in woods. There the gaunt, shadowy form of the Serotine may be espied on a clear night, busily engaged searching for

DAUBENTON'S BAT

insect prey. Naught disturbs the eerie stillness save the rustle of a four-footed hunter among the bracken, the weird hoot of a Tawny Owl, the unexpected cackle of a disturbed Blackbird, or the bark of a Fox in a distant coppice, evidences, nevertheless, of the sounds that may be heard by the ardent nature-lover who delights in wandering abroad under the golden-dance of the starlit sky.

Daubenton's Bat.—Because of its fondness for the vicinity of water, this species is also known as the Water Bat. It is somewhat local in distribution, and although occurring in England, Scotland and Ireland, it appears not to favour the principality of Wales. It belongs to the genus *Vespertilio*, the members of which are characterised by the number and position of the teeth, and also by the long, rounded ears.

One authentic observer states the interesting fact that, whilst some of these Bats inhabit woods, caves, and under the roofs of houses, those which tenant the two first-named abodes are specially adapted in-so-far as the structure of the foot is concerned. That is, the cave-dwellers have larger feet than the woodlanders, and these feet are almost free of membranes ; but in the case of those individuals which prefer a wooded fastness, the much smaller feet are enclosed in the wing-membrane. This adaptation, according to the nature of the environment, is intensely interesting, and provides ample material for close study. Indeed, it is important to note that wild creatures, like their human prototypes, appear to vary

even in one and the same species, and the reasons which control these variations will lead the enquirer along avenues of thought which may result in much new light being thrown upon them. If there is *effect*, there must, of necessity, be *cause*. Nothing is too trifling to notice ; nothing must be taken for granted. If, for example, Daubenton's, or any other Bat, is seen away from its usual haunt, or some trait in its character previously unrecorded comes under survey, the reason which controls these divergences should be ascertained. Even the distribution of animals affords an abundance of original work, as has already been indicated. Primarily, mammals, birds, and other creatures resort to a chosen haunt for one, and perhaps two, reasons ; first, because it provides a suitable food supply, and secondly, because it is a suitable place in which to rear their young. We must not be tempted to encroach any further on these problems, our aim being to point the way towards some of the by-paths of animal study in the hope that the field-naturalist who is desirous of taking up some branch of work hitherto disregarded, may, perchance, be encouraged so to do as a result of what is here suggested.

To return to Daubenton's Bat after this diversion, it should be stated that the wing-stretch is about nine inches, and although the colour of the fur is subject to a great deal of variation in different individuals, the general colour is reddish-brown above, with ash-grey underneath. The base of the fur is brownish-black.

WHISKERED BAT

Frequenting, as it does, the neighbourhood of water, searching for insect prey just over the surface, it is only to be expected that a slow, hovering flight is engaged in. So close does it fly to the surface, that, every now and again, it actually dips into the water ; but it remains an open question as to whether it does so in pursuit of an insect-denizen of the mazy pool, or for the purpose of drinking.

Where it does occur, numbers may be discovered hunting in close proximity to one another, and Professor Bell observed this species in such numbers on the Avon, near Stratford, Warwickshire, as to conclude there must have been one to every square yard, extending over quite a wide region.

Whiskered Bat.—Belonging to the same genus as the last-named species, the Whiskered Bat is somewhat smaller in body-length and wing-stretch. It has been accorded the fore part of its popular name because of the "whiskers" situate upon the upper lip. These are made up of a fringe of long, fine hair. Unlike Daubenton's Bat, the Whiskered is mostly a solitary species, and a careful look-out must be kept for it, if success is to be obtained. Curiously enough, on occasions a number may be discovered hawking together. When this interesting event takes place, it has been suggested that the appearance of a prolific food-supply is the direct cause of the phenomenon.

This Bat is dressed in a fur of dark chestnut on the upper parts, with a tendency towards black, and dusky

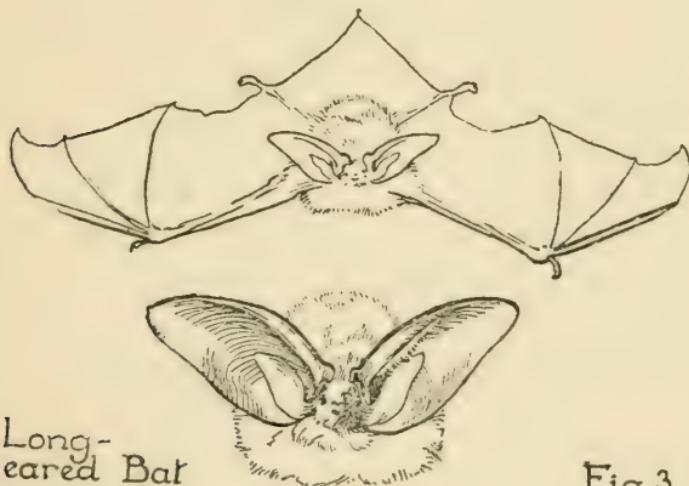
colour below. Those who are familiar with the life and habits of the Common Pipistrelle already described, will best appreciate the statement that the same observations hold good with regard to the species now being considered. The situations frequented are quite as varied as those of the better-known species, and to avoid confusion, careful watch should be kept so as to learn the way to distinguish one species from the other.

Natterer's Bat.—The reddish-grey fur of this species has resulted in the colour being perpetuated as a second name for Natterer's Bat, though it is necessary to point out that the under parts are replaced with whitish. It is not by any means common, although of social disposition, congregating in church-towers and other buildings in large numbers. We have known of a colony of three hundred being discovered under the roof of one house, and when the whole of these animals were captured and placed in one large, open box, the effect of a mass of writhing bodies can be more easily imagined than described. Fortunately, it was not intended to harm or do away with these interesting tenants of an old country house, and after a series of observations had been made concerning them, the Bats were given their liberty at nightfall, when the shades of eve afforded them protection and their appetites were ready to be appeased.

Long-Eared Bat—Bats, like their feathered fellow-fliers, the birds, often occur in unexpected places. Thus, not only has the Ring Dove, or Wood Pigeon,

LONG-EARED BAT

left its greenwood fastness, so as to become an inhabitant of the City of London, in the very heart of the great Metropolis, but just recently a Long-Eared Bat (Fig 3) was seen hawking near to the Mansion House, within easy hail of Bow Bells. Londoners are often heard to complain of their lack of opportunity for studying wild life, but it is the old story of eyes and no eyes, for, as a



Long-eared Bat

Fig 3

result of observations that have been made over a series of years, the actual census of London's fauna is not at all to be despised. Thus, Charles Dixon records no less than 133 different species of birds upon the London list, and we ourselves have seen a Greater Whitethroat calmly pursuing its madcap joy quite close to the Pigeons at the Guildhall, the historic home of the City Fathers. That London is not, as is so often supposed, "a wilder-

ness of bricks and mortar," is clearly proved by this remarkable census of its feathered population. Its many parks, gardens, open spaces, and sheets of ornamental water, not forgetting its famous Thames River, provide capital haunts for wild life, whilst not long ago the site of some old buildings which were pulled down to make room for the new thoroughfares of Aldwych and Kingsway, provided abundant material for a botanical survey. Nature, left to herself, decorates and ornaments —man too frequently desecrates and destroys. Nature makes haste to hide with greenery and blossom unsightly debris heaps, ruins, house foundations and the rest. We have seen derelict building plots at Cromer, in Norfolk, garlanded with a mass of Scarlet Poppies, and a wayside dumping heap, composed of the flotsam and jetsam of human life, is a favourite treasure-ground for all those who study wild flowers, as even such an unsavoury retreat finds them flourishing away from their more natural homes.

So-called because of its long ears, the Long-Eared Bat may at once be recognised by these prominent appendages. It belongs to the genus *Plecotus*, having what are called nose-leaves on the top portion of the nostrils. The ears are united towards the base, and are of delicate structure. The remarkable inner ears, as they may be called, should also be mentioned, as these seem to have escaped the notice of other writers. In colour, this species is brownish-grey on the upper parts, with paler below, but the long ears, and, what is

LONG-EARED BAT

equally important, the shrill cry, are quite sufficient to identify it when one becomes familiar with these characteristics. The way in which Bats fold their wings when at rest can best be likened to a closed umbrella ; but, in addition to this, the Long-Eared species goes one better, so as to protect its long ears, by carefully folding them underneath its wings. When thus seen, the creature is almost unrecognisable as the form observable upon the wing, and it should also be pointed out that, if the wing-stretch was not in keeping with the elongated ears, the appearance of the animal while in flight would be ill-balanced, and its movements ill-controlled. This law of co-relation, as it is called, of which Cuvier, the eminent French naturalist, was such an ardent exponent, provides us with many interesting examples in the world of animal life. A few instances may here be given. A wading bird (such as the Redshank) has a long beak and long legs ; a Tiger has sharp claws and sharp teeth ; a Donkey has flat teeth and hoofs ; a Giraffe has a small head, borne on a long, slender neck, with a small, dappled body and long legs ; a bird of prey (Eagle and Owl) has a powerful beak and formidable talons. A story is told of Cuvier which adequately displays the astuteness and cleverness of which he was a past master. His French students determined to play a trick upon him, and, at the dead of night, they dressed up one of their number in the garb of a horrible monster. They placed horns upon his head, an Ass's skin was girt round his loins, with hoofs upon his feet. At a suitable moment the student

entered Cuvier's bedroom, hovered over the sleeping form, and, in a stentorian voice, bellowed forth : "Cuvier, I've come to eat you !" But the student had reckoned without his host, for Cuvier woke with a start, carefully surveyed the monster that was standing over him, and said : " Come to eat me, have you ? Horns on your head, an Ass's skin round your loins, hoofs on your feet, flat teeth, *graminivorous*, you can't !" The student who desires to acquire further information would do well to prosecute the spirit of enquiry into this vastly interesting law, as by means of it the make-up of an animal can be better understood, and some idea gained of its mode of life. Tempted to write thus because of the long ears and wide wing-stretch of the Long-Eared Bat, which, it may be mentioned, is also known as the Rabbit-Eared Bat, owing to its hearing organs suggesting a likeness to those of the well-known rodent, we may conclude our remarks upon this species by relating that it haunts church-towers, the roofs of buildings and similar places, where, in daytime, numbers may be found suspended in living chains or clusters. A visit paid to a tomb cut in a rock situate in the Libyan desert, rewarded an explorer of those regions with a remarkable sight of countless Long-Eared Bats, which, he has told us, were so numerous that they covered his body during his descent into the crypt, " while hundreds fluttered about like bees around a hive."

Barbastelle Bat.—This Bat is a solitary species, and may also be regarded as one of the most uncommon.

BARBASTELLE BAT

It differs from the Long-Eared in having much smaller ears, and as it is likely to interest those who take note of other anatomical differences, it may be stated that the Barbastelle has thirty-four instead of thirty-six teeth. It is, however, by means of an examination of the peculiar head that sure identity may be made, the abruptly truncated muzzle being set off by a groove, which proceeds up each side as far as the nostrils. The latter are situate in a hairless depression on the upper part of the muzzle. In addition to these peculiarities, the presence of black hair on the puffed-out cheeks, and the broad ears, which are almost as long as the head, add to the curious facial appearance of this interesting species. The fur is brownish-black, with light tips. It is worthy of mention that a white variety of the Barbastelle has been recorded, as, so far as we are aware, albino Bats are of very rare occurrence.

The flight is slow and even laborious, so much so, indeed, that it is easier to watch this species than any other flying mammal our country shelters. It possesses the habit of wandering about, having an unrestricted hunting-ground. It may be likened in this respect to the Mistle Thrush, which is one of the nomads of British bird life. In consequence, one may never be surprised at meeting with the Barbastelle in any likely retreat, though its comparative rarity is such that it may be counted a red-letter day when it is discovered. It belongs, like Natterer's Bat, to the genus *Vespertilio*. It comes from its diurnal hiding place earlier in the evening than the Long-

Eared Bat, and appears to retire from its labours during the silent watches of the night, ceasing its insect-catching long before daybreak next morning. On one occasion we discovered in a porch a large collection of the shorn wing-cases of Flying Beetles, as well as the wings of Moths and other insects. The ground under the aperture was strewn with the discarded remains, and a watch that was kept next evening resulted in one of these Bats being seen in the act of bringing prey to its "eating-house," a habit we have not previously seen recorded. The incident opened up a further interesting point in regard to Bat-life, as we were able to ascertain, with some degree of certainty, the toll of insects that is nightly taken by these winged denizens of the air. When flying in a fading light, or at dusk, it is difficult to follow in detail the movements of a restless Bat intent upon its self-appointed mission, and one can only roughly approximate the vast number of insects it captures, but the instance cited enabled a fair computation to be made of the result of one night's raid. On another occasion we were tempted to watch a Spotted Flycatcher which was apparently in a very hungry mood. Although a bird, the comparison is interesting as showing how dependent we are upon these insectivorous folk to rid the air of pests whose numbers require drastic thinning, and to whose untiring efforts we humans owe more than is generally recognised. The bird in question undertook fifty flights after insects in a quarter of an hour, to all intents and purposes being successful in its quest on

GREATER HORSESHOE BAT

every occasion. We were not tempted to pursue the matter further ; but if a computation could be made as to even the approximate number of insects one pair of Flycatchers (or Bats) destroy during a season, we venture to suggest the sum total would be likely to stagger anyone who was not sufficiently well qualified to appreciate seven or more figures of the multiplication table !

Greater Horseshoe Bat.—All our British Bats are insect-eaters, and should, in consequence, be encouraged ; but in foreign lands the handsome Fruit Bats, or Flying Foxes, as they are also called, are characteristic of the warmer regions of the Old World. As a rule, one or more specimens of these lovely creatures may be seen in one of the heated houses at the London Zoo, and an opportunity should be taken of paying a visit to the famous collection of animals in Regent's Park if it is desired to make a comparison between these handsome fellows from a warmer country, and the sombre-clad Bats of our own changeable clime.

The Horseshoe Bats belong to the genus *Rhinolophus*, to which the Leaf-Nosed Bats (*Hipposiderus*) of other climes are closely related. The two British species may at once be distinguished by the possession of a prominent nose-leaf which entirely surrounds the nostrils, these latter being situate in a depression of the snout. They have also well-developed ears of large dimensions, and these are, as a rule, set far apart on the head. The shape of the nose-leaf also deserves mentioning, as it is made up of two portions, the one directly over the nose

being shaped like a horseshoe, and the lower one is pointed. Enjoying a wide range of territory abroad, the Greater Horseshoe, so called on account of its larger size, is, nevertheless, rarely seen except in our southern counties. Occasionally it wanders further afield, but it has never been recorded from the north, and has yet to be claimed as an inhabitant of the Emerald Isle.

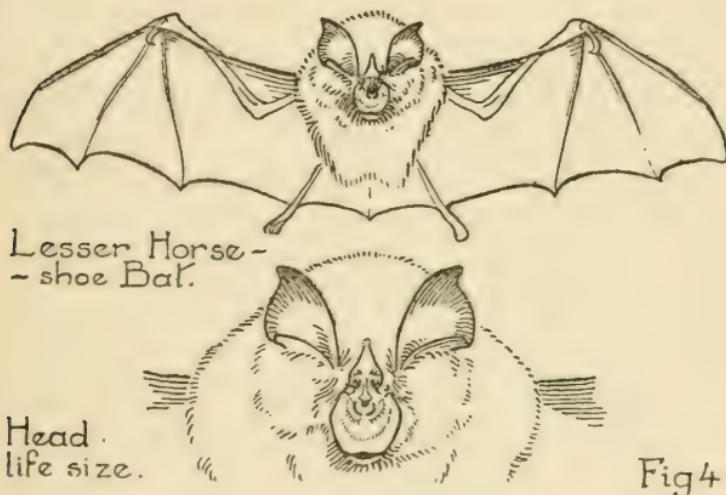
It shows a liking for caves, old buildings and similar retreats, leaving its diurnal resting place when Nature is preparing to assume the robe of night. The question may well be asked : "Of what use is the curious nose-leaf after which this species has acquired its popular name?" The answer is given by one of our foremost zoologists, the late Mr. Richard Lydekker, to whose labours we are indebted for many points in the opening chapter of our story, who writes : "There seems little doubt that the nose-leaf of these Bats is specially intended to aid them in avoiding obstacles during flight, as most, or all, of the species fly later than the Bats which are unprovided with these appendages."

Another observer states that, when seen upon the wing, the Greater Horseshoe appears as large as the Noctule already described, but may be distinguished by the greater proportionate width of the wing-membrane.

Lesser Horseshoe Bat (Fig. 4).—This, the last species with which we are here concerned, has, unlike the Greater Horseshoe, been recorded from Ireland, but favours more or less the same haunts. It is of gregarious habits, and when a long-frequented hiding-

LESSER HORSESHOE BAT

place is discovered, a large colony may be found. One observer states that examples he watched in Gilgit possessed "a powerful and long-sustained flight," but a second naturalist, who confined his attention to European specimens, was equally emphatic in his statement that "its flight is irregular and fluttering." That the Lesser Horseshoe hunts at a higher altitude than its



Greater relative is assured, and it is not so partial to the neighbourhood of trees.

By way of concluding our remarks upon the *Chiroptera*, we may point out that the name given to the Order to which Bats belong, means, literally interpreted, "hand-winged"; that there are over four hundred and fifty distinct species known to science, and that, in addition to their wonderful sense of touch (the eyes being re-

BRITISH MAMMALS

latively small), they are able not only to feed and drink upon the wing, but the females are even clever enough to successfully carry their young through the air, the young ones clinging tightly to their parent's body during the process.

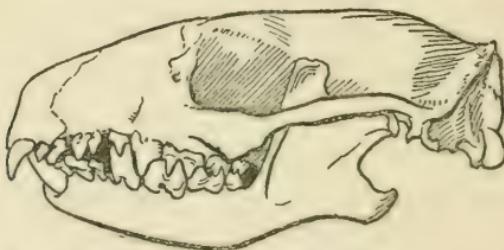
LAND MAMMALS

II. ORDER INSECTIVORA, OR INSECT-EATING MAMMALS

Hedgehog.—Owing to its nocturnal habits, the Hedgehog (Fig. 5) is not nearly so well-known as its plentiful distribution warrants, but whenever discovered it is sure to arouse the curiosity of the casual observer, to whom it is only known by sight. So far as we are aware, this ancient animal does not possess a natural enemy, as its prickly armour of spines so ably protects it, and it has not been necessary for it to change its attire all through the ages that have come and gone since the far-away Miocene time. True enough, the game-preserved detests, and makes war upon it because of its fondness for the eggs of Partridge and Pheasant; but, with this exception, the Hedgepig, as it is also called, has little to fear.

It runs with adroitness, is very intelligent (for one we kept as a pet responded to the call of its name), rolls into a ball at the sign of danger, and, what is of great interest, it is a splendid swimmer. We have watched it outmanœuvre a terrier dog in the water with much

cleverness. As to its fondness for the eggs of game birds, on one occasion we were the privileged spectators of an unrehearsed country incident which is worth telling here. A Hedgehog was seen hunting along a hedgerow bordering a favourite belt of woodland, until it found a Pheasant's nest containing sixteen eggs. Thereupon, it sampled one of the eggs by breaking the shell and sucking the contents dry. The result of the experiment was evidently very satisfactory, as we saw



Skull of Hedgehog. Nat.size.

Fig 5.

the animal take each egg from the nest until the whole of the sixteen were stolen ! The Hedgehog sat up on its hind quarters, held the egg in its fore feet, and when thus engaged, strikingly reminded one of a Squirrel with a nut.

As well as being a good runner and swimmer, it is also a capital adept at climbing, and because of this it is difficult to prevent a tame Hedgehog escaping from even a high-walled garden. It is easily the largest member of the Insectivores, and belongs to the genus *Erinaceus*. It mostly hides by day, revelling in a leaf-

HEDGEHOG

strewn hedge-bottom, copse or wood, setting out on its nocturnal wanderings as soon as the sun goes down. Its diet consists of slugs, snails, insects, worms, frogs, toads, and, it is said, young birds. The general form is so familiar that detailed particulars are unnecessary ; but the shortness of the legs, the profusion of hair on the under parts of the body, and the bright, black eyes, are worthy of mention. It measures over all about ten inches in length.

During the early days of Summer, the female produces her young, the nest being placed at the foot of a tree, as well as in woods, hedges, under faggot stacks, and even in barns and outhouses. They number from two to four, bearing, during infancy, soft, white spines. These soon harden into the prickly appendages known to all those who have endeavoured to fondle such an armoured baby. The young are blind at birth, resembling in this respect most other creatures (including birds) that are born *in a nest*. In Winter the Hedgehog lays up in a torpid state, quietly sleeping until the call of Spring bids it awaken. The number of dead specimens that are to be found in the early days of a New Year, tempts us to suggest that in some seasons there is a certain mortality among them, due, perchance, to an unexpected awakening and consequent lack of food. It is an inveterate enemy of snakes, and even the poisonous Adder, or Viper, is no match for this interesting creature when the Hedgehog has declared a state of war between the two, and no armistice will be recognised.

Mole.—As with the Hedgehog, so with the Mole. Dead specimens are frequently forthcoming, but we know very little of its home affairs, and there is much information still to be gained. In addition to being of nocturnal habits, the Mole, of course, is an underground dweller. At times it may be seen above the soil, or its movements noticed burrowing just beneath, but that is all.

Admirably fashioned for the life it leads, reminding us



Common Mole.

Fig 6.

of a velvet-coated torpedo, this mammal (Fig. 6) ingeniously tunnels its way through the soil, throwing up hillocks of earth as it proceeds, both for the purpose of getting rid of the surplus soil, and also that they may serve the purpose of air-shafts. It shows a liking for districts where the soil is rich and damp, and whole areas of low-lying meadows are riddled with its borings, and made conspicuous by its hillocks of earth. It has a plump, rounded body, with small eyes and ears embedded in silky fur, and short legs, armed on the front pair with five remarkable claws. It is thus splendidly equipped

for tunnelling and digging. It also possesses a good array of small sharp teeth, which enable it to successfully cope with its prey, and this consists of worms, insects, mice, shrews, reptiles and frogs.

As it works so hard as a navvy, small wonder it should become thirsty. Thus, it is very fond of drinking, and will, it is said, sink little well-shafts in quest of a water supply.

Soon after the turn of the year, search may be made for the nesting-earth of the Mole. We find, as a rule, that this is placed underneath a bush or shrub, and it is much larger than the ordinary hillock of earth which is thrown up during excavations. We have recently examined several of these nesting-earths, as we propose to christen them, and have no hesitation in definitely stating that neither the central abode nor the nesting-place are in any way so elaborate in construction as the pictures in Natural History books would have us believe. The nest itself is composed of dead grass and other herbage, and is situate at the base of the "earth," a foot or so below the ground level. In this comfortable abode the five to seven young are sheltered. When quite babies, they are pale brown or grey in colour, with a pink-tipped snout. Like the Hedgehog, the Mole is a good swimmer, but, unless driven to do so by stress of circumstances, it does not take readily to water. Above ground it ambles along at a fair speed, but it can be easily captured, though it is with difficulty that its muscular body can be held in the hand.

Pairing takes place as a result of stern combats between the males, and this perhaps accounts for the number of dead Moles which may be found about the time these contests are held. There are more males than females, and it is probably because of this that fights are so often waged between the males so as to secure a partner.

As to whether this animal perpetrates harm by its exploits in fields, meadows, and other country places, is a matter of opinion. In gardens and on lawns it does become a nuisance, but as in its own chosen haunts it mostly frequents damp fields and meadows, and lays down, as it were, a natural drainage system, there is much to be credited to it in this respect. It belongs to the true Moles which come under the genus *Talpa*, whose fossil remains have often been discovered.

Common Shrew.—Of late years we have noticed with interest that this small British mammal (Fig 7) appears to be rapidly increasing in the region of North Hertfordshire, where our own country expeditions are mostly conducted. It is safe to assert that it is the most prominent mammal noted day after day, and although not often seen, the characteristic noise that is made by the little creature as it goes a-hunting in the undergrowth, is very rarely out of hearing. Can it be that the slaughter of Owls, Kestrels, Sparrow Hawks and similar birds has accounted for this increase in the Shrew's population, or must some other reason be assigned for it? We make the suggestion in the hope that the reader may be able to throw some light on the subject. Few people,

COMMON SHREW

we find, are intimately acquainted with the Shrew, and if a specimen is discovered during one of our Nature-study expeditions, there is always great speculation as to the identity of the wee beastie which supplies the object lesson. But the smallness of body, nice brown dress, and especially the sharp-pointed and whiskered snout, are sufficient means of identification. The latter is a very sensitive organ, and we are reminded in this particular of the Mole, to which the Shrew is, of course, closely related. Indeed, so close is this relation-



ship that the name of Mole-Shrew has been given to certain animals that live in foreign lands.

Shrews, in a like manner to Moles, engage in sexual contests, and it is always interesting to notice that, when a dead Shrew is found, it almost invariably occurs in a pathway. Why is this?

The Common Shrew, as also the Lesser species next upon our list, is an active little beast. It hunts unceasingly for food, and may be watched at close quarters, if the dense mass of growth it frequents does not altogether hide it from view. If a specimen is captured (and it does not die of fright, as it is said to do), a musky smell will be forthcoming, which, it is believed, is a

provision for protecting the creature against its enemies, of which the Kestrel, Owl and Weasel are noteworthy representatives.

The sharp red-tipped teeth are capable of inflicting a nip on the hand, or finger, but a writer in 1607 was quite in error when he accused this harmless mite of "feigning itself gentle and tame, but, being touched, it biteth deeply and poisoneth deadly!" He proceeds to say that "it bareth a cruel mind, desiring to hurt anything, neither is there any creature that it loveth, or it loveth him, because it is feared of all."

Superstition was not only rife in the early part of the seventeenth century, when the author quoted was so curiously misinformed of the ways and mind of the Shrew, for we find to-day that old-time folklore is still existent, and many animal superstitions die hard.

We have evidence from a Fettes College schoolboy that the Shrew exhibits cannibalistic tendencies, as one he kept in captivity killed and partly devoured a frog, several short-tailed field voles, and even one of its own species. When one remembers the smallness of this animal, its minute teeth, and its tender mouth, this achievement is remarkable to notice, and goes to prove how many points of interest still remain unrecorded of creatures with which we are brought into contact. We have since had this cannibalism confirmed by an experienced mammalogist, so that there is little doubt as to the authenticity of the incident above related.

The Common Shrew attains a length of about three

inches, and although it is absent from Ireland, it is well distributed in England and Scotland. It pairs in the early Spring, producing from five to eight young later in the year, these being secured in a cosy nest, which, as a rule, is placed in a depression in the ground. It may hibernate through the Winter, but is soon tempted from its retreat when the return of the birds from the sunny South presages the glad days of Spring. Its presence may soon be detected by the constant utterance of a weak, but by no means unpleasant, stridulous noise which is made as the little creature threads its dapper body through the rank grass. Several of our companions fail to catch the Shrew's contribution to Nature's choir, their ears not being alert to such sounds, but once heard and identified, there is little fear of it being forgotten.

Lesser Shrew.—We are of opinion that this species, the smallest mammal in Europe, is commoner than is generally supposed. Unlike the Common Shrew, the Pygmy Shrew, as it is also called, occurs in Ireland. It is, as its name implies, smaller than its relative, and on several occasions of late we have discovered specimens where they were previously unrecorded. As a matter of fact, we were the first to add the Lesser Shrew to the Hertfordshire list. In addition to the inferior size, this, the second member of the genus *Sorex*, is to be distinguished by its teeth, which are almost of microscopic size, and by the third tooth from the outer margin of the top jaw being the same length as the

fourth. In colouration it is very similar, and, so far as is known, also resembles its better known cousin in its mode of life.

Water Shrew.—The two aforementioned species are entirely terrestrial, but the Water Shrew (Fig. 8), which is the largest of the three, is mostly aquatic, as its christian name indicates. It belongs to the genus *Crossopus*, and bears upon its tail and limbs fringes of stiff hair, which are essential aids for swimming. Ex-



cluding the long tail, this mammal attains a length of three and a quarter inches, and the dark hue of the back is succeeded on the under parts by whitish. In some individuals, called melanic varieties, all-black colouration holds good, the lighter under parts being entirely absent.

To observe a Water Shrew performing its ablutions is a sight not readily forgotten, as it may be seen in a clear stream swimming with great cleverness, taking superb dives, and adroitly running on the bed of the water in search of food. As it proceeds on its hunt, it sedulously examines any likely hiding-place for fresh-

WATER SHREW

water shrimps, which is apparently its chief food. Seen for the first time, with bubbles of silver adhering to its soft, glossy coat, the observer may well pause as to the identity of the remarkable creature he has encountered. Upon emergence from the water, the coat will be found to be quite dry, a wonderful provision of Nature, which reminds one of the proverbial duck's back.

Water Shrimps do not constitute the sole food of this aquatic mammal, as it also partakes of the spawn, or fry, of small fishes, such as minnows, and it is also said not to disdain the flesh of larger animals.

It burrows into the banks of a pond or stream, where, when not engaged in the water, it seeks shelter, but if danger threatens, it bolts from its hiding-place and plunges without hesitation into the liquid element. The burrow is also used for breeding quarters, the female producing from five to seven or eight young at a litter.

III. ORDER RODENTIA, OR GNAWING MAMMALS

Common, or Brown, Hare.—*Lepus europaeus*, to give the Hare its full scientific name (Fig. 9), is at all times an interesting animal to watch, and, truth to tell, it seems almost as curious itself as regards those who come upon its track. It has the habit, when bolting across country with much fleetness of foot, of suddenly calling a halt, sitting on its haunches with ears raised expectant, ready at a second's warning to place a safer distance between it and the observer.

It loves, best of all, wide, undulating fields where there is naught to hinder its free, open life. It rarely frequents woods, though, on occasions, it shows a liking for plantations, where, beneath the young trees, there is a plentiful supply of tangled vegetation. When disturbed, it soon gets going, traversing a large area of ground with amazing swiftness and evenness of foot. If it wishes to cross from one field to another, it will make for a gap in the hedge, and if it is hard pressed, and it is necessary to swim a stream, it will readily do so.

COMMON HARE

The Hare depends for protection upon its powers of locomotion, as it does not, like the Rabbit, resort to an underground dwelling. Herein is the reason why the young—called Leverets—are born with their eyes wide open, ready to scamper about soon after they are produced. This is a very important provision of Nature, as, not being sheltered in a hidden nest, the young are



Brown Hare

Fig 9

more subject to attacks by numerous enemies—four-footed and otherwise—and it is highly essential they should in some measure be able to protect themselves. A baby Hare a few hours old is one of the cubbiest of wild creatures, and cannot fail to make a strong appeal to all those who are fond of animal life. To children, especially, a Leveret is very dear, and among the mammals exhibited in the Museum of which we are in charge, none calls forth the best side of a boy or girl's nature more than one of these babies which breathed its last

when being tended in our own hands. Well adapted for observing danger, having the eyes placed in such a way that it can see all round, the Hare, as with other animals that are hunted, is no exception to the rule. In spite of this, as also its swiftness of foot, sense of smell, and quick breeding, its numbers have decreased within recent years, though there is no cause for alarm as to its ultimate survival.

Accused of being a foolish animal—an old country saying has perpetuated this: “As mad as a March Hare”—because it has the habit of retracing its steps to the “form” it had left, the reverse is true, when, as it so often does, it runs uphill from its pursuers, in which event it is greatly aided by the short fore, and the long hind, legs.

In diet, the Hare is a vegetarian, and often commits sad havoc in cornfields, but being a favourite animal for coursing, and for the table, it is afforded some amount of protection.

But it is best to think of this typical inhabitant of rural England as a lover of the open heath and field, roaming at will in the very heart of the country, free and unfettered, under the open dome of the blue sky.

The long, black-tipped ears, the curved claws, wealth of hair, well-proportioned body, are features of interest. It measures about twenty-four inches, and an average specimen turns the scales at eight pounds. The four or five young are born during the Summer, more than one litter being produced in a season.

Blue, or Mountain, Hare.—We have had the good fortune to see this beautiful British mammal at close quarters in the Island of Arran, which island has been described by one of our most eminent scientists as a naturalist's paradise. Two long holidays spent upon the island have certainly confirmed this by no means too lavish praise, as the fauna and flora are both rich and varied, and there is always the mountain and glen, tumbling "burn" and wooded fastness, shore and sea, close at hand. It is chiefly in the Highlands and Islands of Scotland, as well as in Ireland, that the Blue Hare makes its home, though it also occurs in a few of the northern counties of England.

It is rather smaller than its commoner relative, attaining a length of twenty-one inches, but the chief interest associated with it is the change of dress which it undergoes; the Winter coat being white, so as to afford protection upon the snow-covered hills that the animal frequents. The colour of the Summer fur is greyish, and not blue, as one of its names would lead us to suppose. The hind legs are almost as short as those on the front part of the body, and although the ears are similarly tipped with black, they also are shorter than in the common species. Living as it does among the mountains, hills and high moors of the North, it is only to be expected that its fleetness of foot is less than that possessed by its cousin of the fields. It has for companions the Black and Red Grouse, the Red Deer, Ptarmigan, Peregrine Falcon, Eagle, Buzzard, and Curlew,

all in keeping with the wild, uncultivated country where it chooses to make its home.

It possesses the same habit as *Lepus europaeus* of lying close, but it does not resort to a "form" in the same way. The food mostly consists of the seeds of the pine-tree and grasses. It is believed that only two litters of young are produced each year.

Rabbit.—Belonging to the same genus as the Hare, the Rabbit's specific name at once indicates its disposition—*timidus*. Quite unlike the two rodents first considered, the present species is a social creature, breeding and congregating in large numbers, the home being called a warren. It reproduces at an alarming rate, and in Australia it has become such a pest that fortunes have been spent upon means to reduce its numbers, but without avail. It was a sad day for agriculturists in the land of the golden fleece when a settler there introduced Brer Rabbit. It has flourished exceedingly, owing, in all probability, to the country suiting its requirements, and the absence of natural enemies. At times, it becomes a pest in our own land at home, when efforts have to be made to reduce it, but this is easier said than done. In spite, however, of its fecundity, and its revelling in the pastures and grassy hillsides of our English countryside, there are some districts from which the march of civilisation has almost stamped it out. Opposite the country study from which we write these notes, there is a wooded common of some eighty acres which dates from the time of Offa, one of the

Saxon Kings of Mercia. It is a wonderful paradise for bird and plant life, as well as a prolific hunting ground for the entomologist. It serves as a sort of natural catchpit between two ridges of ground, with a small stream traversing almost its whole area. There is a variety of soil, such as peat, chalk, clay and gravel. Consequently, there is marsh land and dry land, and because of all these elements, the animal and plant life are varied and plentiful. But, and here is the point of our story, the building of a new town close to the borders of this ancient common has resulted in a diminution of certain forms of wild life. The Pheasant still lingers there, and there is an abundance of small bird life, but we are told that in days gone by it was no uncommon thing to bag a thousand Rabbits in one day's shoot, whereas to-day this animal rarely greets us as we daily renew acquaintance with this rare belt of rural England. That the Rabbit is capable of travelling at a good speed may best be witnessed when the last cut is being made in a harvest field as the poor, timorous Bunnies take cover until almost the last moment, when they must perforce bolt for dear life. If the Rabbit gets away, well and good, but if, as so frequently happens, there are men, women and children with an array of mongrel dogs, all ready to pounce upon the frightened prisoner, a sickening sight follows, as to which we do not propose harrowing the reader's feelings. Suffice it to say that, under these conditions, the Rabbit's powers of movement are put to the severest test, and it is amazing the speed that is

generated. The same holds good when a Stoat is in hot pursuit, as the carnivorous beast is one of the Rabbit's most dreaded enemies. But, in this case, it is a neck-and-neck race, with, perhaps, the odds on the Stoat winning. As the rodent is pounced upon, it utters a piteous scream most distressing to hear, but a merciful Providence has decreed that it is soon over. Probably the weakest perish and the strongest survive, so as to be better able to carry on the destiny of the race. Bulk counts for little in the struggle, as witness the giant creatures of past ages long since blotted out of existence. The prize is won by the swift and sure, though in human life these prizes are, to say the least, often unfairly distributed. But we are not concerned with human problems here, and must restrict our observations to the creatures of the wild. The general form and colour of the Rabbit is so familiar that it need not be described, except to point out that there is no black tip to the ears, but that there is a prominent white patch on the under part of the tail, which is said to serve as a danger signal. It can both swim and climb, but, unless pressed, is unlikely to do more than bolt to cover. It sits extremely close, especially among bracken and other woodland growth, where it is so admirably protected, and only bolts when necessity demands it. A dog will scent a Rabbit and stand pointing towards it, but the rodent refuses to budge until the word of command is given to man's trusty friend to search cover. Then it is a case of the best man wins !

Several litters are produced during the year, each litter numbering from five to ten. A nest is hastily constructed below ground, and, as the young are both naked and blind at birth, the parents need to have their wits about them to keep enemies, such as Stoats, Weasels and Foxes, at bay. Taking care to feed upon the best vegetable food it can procure—grass, parsley, parsnip, and the rest—small wonder that the Rabbit is so much esteemed for the table. If this was not so, one wonders what would happen if its numbers were not thus reduced, and during the Great War, when there was such a scarcity of butcher's meat, the homely Rabbit supplied many a cupboard that might otherwise have gone bare.

Squirrel.—Associated as it is with boyhood's days, small wonder the furry form of the British Squirrel (Fig. 1c) still makes a bold appeal to us. It was a cheery woodsprite in the glad days of our youth, and ever since those far-off days our enthusiasm for it has remained undimmed.

It is very partial to fir and pine woods, where it not only finds the seeds of the cones excellently suited for its gnawing habits, and what is equally important, of palatable qualities, but among the dense, matted branches it is able to leap from bough to bough with amazing cleverness, and also finds a fir-tree a congenial spot in which to hide its large nest or drey.

Of recent years, the introduction in our English woods and parks of the American Grey Squirrel has had disastrous results in reducing the numbers of our own

BRITISH MAMMALS

familiar Red Squirrel, and this interference with the natural fauna of a country cannot be too strongly condemned. What has been already written of the Rabbit in Australia is sufficient evidence of the dire results of



this unwarranted tampering with Nature, and it is to be hoped that no further experiments will be made in this direction.

Being so elegantly attired in rich reddish-brown, with light under parts, a fine bushy tail, tufted ears, and eyes that shine like black diamonds, having also such engaging habits in the tree-tops, small wonder the Squirrel is

SQUIRREL

such a universal favourite. True enough, it is disliked by game-keepers, because it purloins the eggs and young of birds, and by foresters because it does damage in plantations, but with these notable exceptions, it is everybody's friend. It is pleasant to hear, therefore, that in spite of its grey cousin's introduction, the European Squirrel is extending its range in several localities.

In answer to a question, set in an examination paper at one of the schools which we visit for Nature-study classes, and having reference to hibernating animals, the Squirrel was, without exception, included in every reply handed in. This tempts us to point out that, although less active in Winter, this rodent does not fall into a torpid state, though it is quite true that it lays up a store of nuts, acorns, and other provender in a Winter larder so as to keep it going through the hard weather. We have more than once seen it quietly eating its Christmas dinner, and then frolicking about in the pleasant manner it is wont to do. In addition to the food mentioned, various kinds of fungi and fruit are also taken.

Activity seems one of the important phases of its existence, and it reminds us in this respect of the energetic little Tree Creeper, and the acrobatic Titmice, who never seem happier than when searching assiduously for lurking insects in the crevices of bark and other places. It builds both a Summer and Winter nest. In the former the young are, of course, sheltered, the latter serving as a comfortable abode in which to spend the colder months of the year. Three or four constitute the litter, and

these may be expected during the Summer. They may be regarded as the dearest baby pets produced by any four-footed British mammal, and although amenable to captivity, we like best to associate the Squirrel with the wild greenwood, where it can pass its little life as an active, and, let us hope, happy creature, scampering round tree-trunks, playing hide-and-seek with the observer, who, being a lover of Nature's children, never tires of watching this woodland rover both at work and play. It belongs to the genus *Sciurus*.

Dormouse.—Green grassy lanes, so characteristic of Charles Lamb's "hearty, homely, loving Hertfordshire," and similar tracts of country elsewhere, are, we find, the most likely situations in which to search for this delightful little beast (Coloured Frontispiece). There, in the tangle of a bramble-bush, or a stalwart hawthorn, it suspends its oval nest, and even in the depth of Winter it may be discovered tucked up inside its snug abode, fast asleep. When thus found, naught disturbs the little slumberer as it is rolled up in a tight ball, feet to feet, head to hind quarters, and the long, bushy tail wound right round as a means of keeping its dapper body from becoming unfastened ! When held in the hot hand, or if introduced to a warm room, the sleeper may awake, and precaution should be taken for fear this happens.

In several ways the Dormouse reminds us of its near relative, the Squirrel, though it is mostly nocturnal in its habits, and regularly hibernates through the Winter. It is attired in a warm coat of reddish, with white on the

DORMOUSE—HARVEST MOUSE

under parts, but the ears, unlike those of the Squirrel, are not tufted. Before retiring to sleep, so as to be secure from frost and cold, the Dormouse, like the Hedgehog, Frog and Toad, puts on a surplus supply of fat, in order that its fasting may not interfere with its chance of survival until it again commences to feed. The three or four young are born in the Spring, and it may be that a second litter is produced in Autumn. It dearly delights to partake of hazel-nuts, and wherever these occur, search may be made for it with almost sure success, but in addition, and this is an important item to note, it is said by competent authorities to feed also upon insects. Statements that have been made by well-known writers as to the nest of this species entirely disagree with our own personal observations extending over a lifetime. We have never yet found the Dormouse nesting in the hole of a tree, or in the ground, a small globular nest made of dead grasses being, as a rule, suspended in a hedgerow or bush. Neither have we yet discovered that this little rodent of the genus *Muscardinus* ever appropriates the nest of a Jay, or other similar bird, either for a Summer or Winter abode.

Harvest Mouse.—Although the Harvest Mouse (Coloured Frontispiece), so-called because it is frequently discovered among corn in the harvest field, is generally distributed in the southern counties of England, we have often searched for it in vain, even in districts where it was said to occur. Our experience goes to show that it is of local occurrence, but it is such a delightful little

creature—the smallest of its family—that no effort should be spared by the mammalogist to discover its whereabouts, if at all possible. Candidly, we make the confession that we have rarely found it in the country we have frequented, and enquiries made away from home have not resulted in much satisfactory information being gathered. Our friend, the late F. G. Aflalo, says that “like the Squirrel and Dormouse, it burrows, usually underground or in hay-ricks, sometimes breeding in the latter.” It constructs a small nest, which, nevertheless, is wonderfully woven together, and, when it is deftly hung among the corn-stalks, it presents an attractive appearance. In this cosy homestead from five to eight young are born, and, although these are blind, and at first unlike their well-groomed parents, when they are able to move about as a family party, as pretty a sight as could be wished for is portrayed to view. So, too, when one of the adults is seen cleverly balancing its small, reddish-brown body on an ear of corn. It is so light that the corn-stalk easily bears the animal’s weight, without much evidence of the weight affecting the light object upon which it is suspended. As the bright-eyed little rodent calmly surveys the scene of its operations from such an eminence, it is a study worthy of an artist’s brush, or a camera picture. As several litters are produced during the year, the wonder is that this species is not commoner than it is; but there is reason to believe that it may be often overlooked, and too frequently passed by unidentified.

LONG-TAILED FIELD MOUSE

Its food consists of grain and insects, and, as a Winter supply, it stores up the former to help it through the short days and long nights. The prehensile tail is used for leverage and anchorage, and, if a specimen is handled evidence of this trait will soon be forthcoming. Although we do not wish to encourage such a proceeding, it is interesting to note that Mice and Rats, as well as Snakes, are unable, if held by the tail, to recover the upright position, or to cause harm to their captor. As to what would happen if such a wily little beast as the next species upon our list was thus held, we would not care to predict; but that, as Kipling would say, is another story! The Harvest Mouse is included in the genus *Mus*, and attains, like the Dormouse, an average length of five inches.

Long-Tailed Field Mouse.—This active little mammal (Fig. 11) is much commoner than most people imagine, but, as a rule, it only comes from its underground home during the night, and is thus rarely seen. It is a curious fact that, just previous to writing these notes, one of these animals scuttled under the verandah at the back of our house whilst it was yet light. We know full well that for several years this species has lived under a grassy bank in our garden, for we have caught and released quite a number there in a trap baited with a piece of carrot; but it is not often that we catch sight of the wily little beast during the daytime. We have strong suspicions that the specimen referred to had cleverly discovered a bag of seed potatoes that were stored under the verandah,

BRITISH MAMMALS

for we have long since proved that the Wood Mouse, as it is also called, is very fond of gnawing these, both when they are growing beneath the soil, and also when they are placed above ground to dry during Summer and Autumn.

The damage committed, however, is not great, and, so long as its numbers do not unduly increase, we shall certainly afford every protection to this interesting tenant of our garden, almost the only mammal, except a



Long tailed field mouse

Fig 11.

stray Wild Rabbit, Mole, or Brown Rat, which our garden shelters. It may be known by its long tail, large ears, long hind legs, and bright bulbous eyes. It is very active in its movements, and requires more than ordinary care in handling, or it will assuredly make good its escape.

It is a trim little creature, too, dressed in a neat coat of reddish-grey on the upper parts, with a light brownish colour on the breast, and whitish lower down.

It frequents woods, copses, hedgerows, fields, gardens and other likely places during the warmer months;

LONG-TAILED FIELD MOUSE

but in Winter it resorts to farm-buildings, stacks and even houses. We have caught several fine specimens in one of the upstair cupboards of our own homestead, and have often wondered how they managed to get there, and what they found to eat. In a natural state, it feeds upon hazel-nuts, of which it is very fond, acorns, corn, and also insects.

It breeds with great frequency, several litters of from five to seven young being brought forth during the year, and these commence reproduction on their own account when only a few months old. It is certain that but for the birds of prey, together with Stoats, Weasels, and other animals, this Mouse would be a serious pest, though it does not become a plague to the same extent as the Short-tailed Field Vole, of which more anon. It does not hibernate during Winter, as some of its cousins do ; but at the same time it lays up a store of food to which it can resort when hard weather means hard hunting for man and beast. In the early Spring we frequently discover empty nut shells, the kernels of which have been gnawed quite clean from their snug cradles by this animal. The nut is not cracked open, as might be supposed, but a neat hole is drilled in the side. Curiously enough, the hole is very similar to that made by the Nuthatch, a woodland bird, about which we have something to say in another volume of this series devoted to our bird friends.

For a nesting site the Wood Mouse chooses a hole in the ground ; but it is stated that it will also take

possession of the old nest of a bird in a hedgerow, or even construct one of these homesteads of its own accord.

House Mouse.—We know some people who wear the mangled corpse of a Dove in their hats, a bird which is associated in our minds with much felicity and an old-established omen of peace, who would shrink from the form of a Mouse, and with a paroxysm of fear ! We cannot reconcile the attitude of such persons as these. They would probably scream at the sight of a captive bird in a prison cage, or cruelty inflicted to young birds, but they are themselves aiding and abetting a distasteful and nefarious trade in wearing the stuffed remains of beautiful feathered creatures upon their own heads. Great cruelty is involved in this plume and bird trade, and it is high time that our women folk recognised that they have the power to put a stop to it by ceasing their demand for the wretched caricatures of bird life which they display. We do not desire to be accused of oversensitiveness, but we know our facts, and feel sure that no British woman would intentionally cause undue suffering to any wild creature. Ignorance is at the root of the evil, for such it undoubtedly is, and the sooner we as a nation recognise the true moral running through the following lines (we believe they were written by John Ruskin) the better :—

“ Let them enjoy their little day,
Their humble bliss receive ;
Oh ! do not lightly take away
The life thou cans’t not give.”



BRITISH SQUIRREL.

HOUSE MOUSE

Thus, the wee timorous Mouse, that clean, elegant little rodent which so delights in human habitations, where it pays constant visits to the food cupboard, is looked upon with fear and scorn by the very people who remind us, as they walk about, of a horrible show-case at a museum, where one too often sees wild animals displayed in a manner very untrue to life.

Less in length, by about one and a quarter inches, than the species last under review (the Wood Mouse measuring eight inches, including the long tail), the House Mouse is known also by its greyish-brown upper parts and lighter colour underneath. It does not solely resort to dwelling houses, as we have caught it in fields in the very heart of the country. Its extraordinary power of movement is well known. Upon this it depends for protection, and many exciting hunts, even when the odds are all against the active little beasts' escape, often end in failure to the pursuer.

The House Mouse reproduces with alarming rapidity, the well-made nest being composed of almost any kind of material that is available. In this comfortable abode from five to seven young are born, and at first they are naked and blind. After the fourteenth day the young Mice are able to shift for themselves, and, as the parents soon think of making preparations for another litter, the young are allowed to earn their own living, and to form homes of their own in double-quick time. The domestic Cat is, as is well known, one of the Mouse's greatest

enemies ; but, in a state of Nature, Owls, Hawks, Foxes, Weasels, Stoats, and other predatory creatures greatly aid in keeping its numbers in check.

Black Rat.—Still belonging to the same genus as the Mice (*Mus*), and before coming to the Voles, we have to consider the claims of the Black and Brown Rats, animals which are probably more disliked than any others included in our Mammals volume. It is the Common, or Brown, Rat which has become such a pest, as the Old English Black Rat, as it is called, is not by any means a common inhabitant of our country, and in many districts it has entirely disappeared. In what are sometimes referred to as “the good old days,” when, nevertheless, human existence was less strenuous than it is to-day and there was more time and leisure, the Black Rat occupied similar territory to that enjoyed by his commoner relative to-day, and it would be interesting to know exactly why its numbers have been lessened to such an extent that it may now be regarded as a rare British animal. War was probably waged upon it in the same way that we institute Rat-crusades at the present time ; but it is difficult to believe that even drastic measures would be sufficient to cope with the means of increase and escape which the Rat possesses. Howbeit, the Black Rat has given way in our fauna to its brown cousin, and those who own granaries and other buildings, which at one time contained more than their fair share of black representatives, now find the Brown Rat occupying pride of place.

BLACK RAT

The Black Rat is subject to variation both in colour and size. It measures about seven inches, exclusive of the long thin tail, which accounts for another seven inches or more. As a rule, the fur can best be described as greyish-black on the upper parts, with ash colour underneath. The somewhat pointed head is well set off by the large ears and round, bright eyes.

Whatever opinions one may hold respecting these four-footed pests, one good trait in their character must be referred to, and that is their unfailing solicitude towards their young. In addition, Rats are very cleanly in habit, though so often resorting to, and feeding among, such insanitary retreats. As a matter of fact, it is because they clear away distasteful offal that one is able to say a good word in their favour, and if they did not come into contact with human beings, and thus disseminate disease, all would be well. They are, however, disease agents, or carriers, and, in view of this, and the damage they commit, it is highly essential their numbers should be reduced so as to be kept within respectable limits.

The preponderance of the Brown Rat in this, the twentieth, century, has also to be accounted for by the rapidity with which it multiplies, and its much larger litter of young; for whereas the Black Rat produces a small litter of three, its brown relative is ill-content unless it has ten or more young ones. These commence to breed among themselves very rapidly, and a young female will bring forth her first-born when she is only

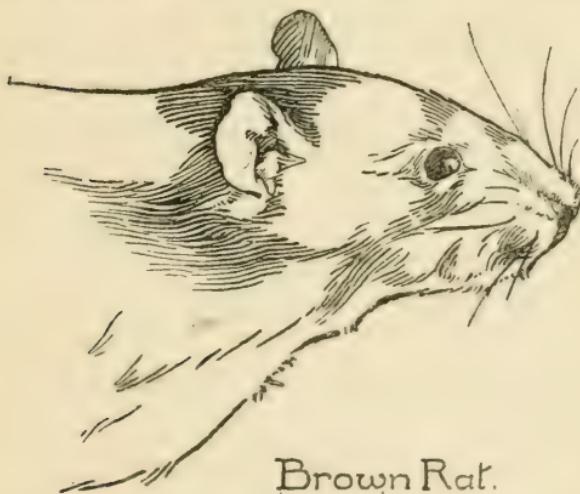
BRITISH MAMMALS

three months old. It has been computed that, if three litters of ten each were produced every year, a pair of Brown Rats would, at the eleventh generation, due at the commencement of the fourth year, number no less than one hundred millions! Fortunately, the Rat has several natural enemies, which help to keep its numbers in check. Otherwise our country would be over-run with them, with results little short of disaster. The young of the Black Rat are born blind, but at the age of sixteen days their eyes open. It is curious to reflect that, when kept in captivity, the parents will often eat their own progeny, and that the young are more savage and less docile than their parents, which have probably become reconciled to their cage life as pets.

Brown Rat.—Whilst this common species (Fig. 12) is resident both in town and country, and around farmsteads, granaries, corn stacks, and the like, where it commits great havoc, it is probable that if its numbers could be reduced to a minimum in large towns and cities, its carrying powers of disease germs would be less acute. It seems that London is the greatest sinner in housing such a plethora of Rats in its warehouses, sewers, basements, cellars, Thames-side, and other places, and we are told by eye-witnesses that, when there has been a fire, whole hordes of these rodents have been seen leaving the building in a body, terrified of the calamity that had befallen them. Both wild and domestic animals have a great dread of fire, especially dogs and horses. As showing how Rats infest corn stacks, one or two of these

BROWN RAT

stacks were being threshed near our home a year or so ago, and over three hundred and fifty Rats received their quietus as they bolted from the abode in which they had made their temporary home. Unfortunately, as we were afterwards told, a Weasel or two were also put to death, this carnivorous little beast being one of the Rat's greatest enemies. It is here that the woeful



Brown Rat.

Fig 12

ignorance of country dwellers is made manifest, and the interests of the farmers and game-preserved clash. If game preservation is necessary, or desirable, the Weasel must be kept under. So, for that matter, must the Rat, which is equally, if not more, fond of eggs and young birds. But it should be noted that the Rat is a farmer's pest, whereas the Weasel is more or less his friend by preying upon the former. Yet, there are few farmers who would be willing to preserve a Weasel, though the

presence of one in a corn stack or granary would be a sure means of keeping the Rats in check. The same thing holds good with regard to Owls, which not only prey upon birds, large insects and other creatures, but also take immense toll of Frogs, Rats, Mice, Voles and Shrews.

The Brown Rat is the successful rival of its black relative in size, attaining a length of about sixteen and a half inches, including the tail. Its ears are less prominent, the head and tail are both shorter, and the fur is greyish-brown on the upper parts, with whitish underneath.

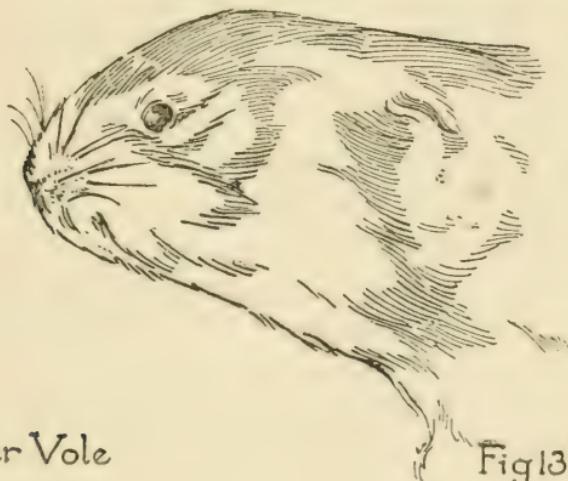
It seems that this present-day pest was first introduced into Britain about the year 1700, when it was probably a stowaway on some vessel which reached our shores. It was a later arrival than the Black Rat, but it has long since ousted the latter from its former strongholds, and is now widely distributed all over the country. Although a rodent, or gnawing animal, its diet is of a varied nature, and hardly anything comes amiss to it. It is a good swimmer, and because it frequents the seashore and fresh water, it is often a target for the Heron, whose bayonet-like bill is all-sufficient to despatch the four-footed beast without much trouble. It is an enemy of the poultry-keeper, as it is very fond of eggs, which it cleverly contrives to carry away to a safe retreat by rolling them along the ground.

When cornered, the Rat is no mean adversary, and in the trenches and dug-outs during the Great

WATER VOLE

War, the occupants thereof were often on more intimate terms of acquaintance with it than they cared to be.

Water Vole.—It is a thousand pities that this clean little British mammal (Fig. 13) is so often stupidly referred to as a Water Rat. It is a Vole, an aquatic, Beaver-like animal, which lives for the most part on a vegetarian diet,



Water Vole

Fig 13

and does very little harm. As with its two succeeding relatives, it belongs to the separate genus *Microtus*, and should not on any account be confused with the species last under review. Our rambles by pond and stream, with the wind whispering through the rushes, and the high-pitched love-call of the Little Grebe, the cluck of a timorous Water Hen, and the blue flash of a Kingfisher, would lose much of their quiet charm if the Water Vole was not seen swimming across the surface, or intently

feeding upon a sprig of watercress or other succulent plant. Each day as we explore a little stream that meanders pleasantly in Summer, but becomes a seething current in Winter and flood-time, we look over the bridge that spans the water for a sight of our familiar friend whom we have come to regard as peculiarly our own. He—Tim, the Water Vole—often disappoints us in our search ; but when he does appear, it is always a source of pleasure, and we never refrain from looking, come good or ill.

A capital swimmer, an adept at diving, careering beneath the surface if necessity demands that it should take cover, a bank-burrower of no mean order, this animal is indelibly associated with quiet rural retreats where Nature is seen at her best and naught disturbs the stillness. There the Water Vole passes its time, swimming, resting, breeding and feeding, and if one is caught in the act of performing its toilet, a pretty peep into the home-life of a wild animal may be witnessed by all those who have eyes to see and hearts tuned to respond.

Attired in a greyish-brown coat, with a tinge of reddish, with long, thick fur and five naked pads on the soles of the long hind feet ; bright, clear eyes, a prominent moustache and appealing manners, small wonder this aquatic mammal is an established favourite with those who know it best and care for it most.

It attains a length, over all, of about thirteen inches, and produces a litter of five or six young in the early

SHORT-TAILED FIELD VOLE

days of Summer. The well-built nest is globular in form, and is composed of various kinds of dry plants collected from the near vicinity of its home. We have found that where water lilies grow, this Vole shows a love for the flowers, but we like to see it best of all when it is sitting on a small heap of *debris* anchored in mid-stream, with a plant held between its fore paws, nibbling away contentedly, and yet keeping watch and guard in readiness to dive and swim away to its hole in the opposite bank as soon as danger threatens.

Short-tailed Field Vole.—This short-tailed rodent with such a long name is a common inhabitant of our country, and in some seasons its numbers increase so greatly beyond the normal that stern measures have to be taken to cope with them. It is the old, old story of the wilful upsetting of Nature's balance, which, if left to itself, has a way of adjustment which every patient student will have experienced. There is no such thing as a unit in the world of life. All living things are related and inter-related, dependent and inter-dependent. It is a case of each for all, and all for each. We have arrived at this happy consummation because our first-hand studies have led us into by-ways which we never contemplated when we first began our apprenticeship in Nature's workshop many years ago.

No animal or plant lives an entirely separate existence. It both offers and receives, gives and takes. This is the basis of its life. This law of dependence and inter-dependence can be fully illustrated in the case of the

animal now under review. When clover was first sown in New Zealand, it was found that it did not become fertilised, owing to the absence of Humble Bees. These useful insects were, therefore, introduced, and for a few seasons all went well. Then it was discovered that the Bees diminished, the explanation being that they were being preyed upon by Voles. The latter became a plague, and something had to be done to combat their ravages. An effort was then made to obtain a supply of Hawks and Owls, so that these birds of prey should help to reduce the rodent's numbers, and it is satisfactory to note that the results were so encouraging that the right balance was again struck.

Nature *will* have her own way. She may receive a check, and sustain temporary defeat, but she is bound to win in the end, and goes on her way undaunted. Man's interference with animal and plant life often leads to disastrous results, and once the balance has been upset, it is difficult to right it again. We have seen evidence of this over and over again, and the most woeful ignorance still prevails concerning our friends and foes. We have witnessed the destruction of both one and the other, especially by amateur gardeners who know not the error of their ways, and, what is infinitely worse, they refuse to be enlightened. There is hope that the younger generation will be better acquainted with wild creatures' ways than our grown-ups, for, as a result of personal observation, our young folks cannot fail to acquire such knowledge as will in after life stand them in good stead.

SHORT-TAILED FIELD VOLE

Feeding as it does upon clover, grass, seeds, fruit, corn, turnips, potatoes, and other useful crops, the Field Vole is to be regarded as an enemy of the agriculturist, and it also takes roots, berries, beech-mast and nuts. In addition to being a ravenous feeder, the rate at which this species multiplies, and its consequent plentiful distribution, must be taken into account. If a horde of Voles take possession of a tract of land where crops are growing, nothing can prevent wholesale devastation of the area infested, and we are reminded in this respect of the enormous visitations of countless millions of Mosquitoes in sunnier lands than our own.

From four to eight young are produced in a litter, several litters being forthcoming during the season. The nest, constructed of dry grasses and moss, with a lining of the finer portions of same, is placed under ground. The animal may be known, as its name indicates, by its short tail, the entire length of body and tail being only five or six inches. It is dull greyish-brown on the upper parts, with greyish-white underneath. It is not so active of movement as the Long-tailed Field Mouse, and our observations lead us to conclude that it often falls a prey to the Kestrel, whose efforts to secure food deserve more success than they usually receive. As one watches this bird of prey, the commonest species now left to us, one cannot but admire its industry and perseverance when it is hunting for a supply of food.

Bank Vole.—This species (Fig. 14), the last rodent

with which we have to deal, is of local distribution, but where there are ivy-covered banks, coppices, or plantations, it is almost sure to be found. One cannot, as a matter of fact, disassociate this Vole from ground-loving ivy, for under the welcome shelter of the ever-green plant it dearly delights to dwell. It is somewhat misnamed as the Bank Vole, though it must be admitted



Bank Vole

Fig 14

that the bank of a hedgerow that is ivy-covered is one of its favourite abodes.

One curious trait in connection with this species is that, when captured, it exhibits a confidence, or, maybe, cowardice, which it is very interesting to notice. It will lie perfectly still in the open hand without making any effort to escape, but whether this is due to fright, or fear, we would not care to predict. Suffice it to say, it differs very considerably from any of its relatives in this respect, and within a few minutes after capture it will

readily take food that is offered. We have found that, after being kept some little time as a pet, it becomes more self-assertive, and we have, on handling, often received a nasty nip. This strange perversion is difficult to understand, as the natural inference is that the animal would become rather more tame and amenable to captivity. But the ways of wild creatures, as with those of their human prototypes, are past understanding, as all those who have been brought into contact with them will readily testify.

It is said that the Red Bank Vole, as it is also called, is as equally destructive as its relative last under review. It is wholly vegetarian, and undoubtedly does harm to growing crops, and we have also watched it during Winter (for it does not hibernate) gnawing bark from a young tree. In hard weather several kinds of mammals have to resort to this method of procuring food, and, during the severe Winter of February, 1919, we noticed whole wooded areas stripped of the bark as a result of the attentions of Rabbits and other members of the order *Rodentia*. The weight of snow was such that the smaller bushes and trees were brought down level with the ground, so that there was no difficulty in reaching the branches which thus afforded welcome sustenance in the hour of need.

The Bank Vole has an overcoat of rich reddish-brown, with grey flanks, and almost white under-parts. It has a dark brown tail above and white below.

Probably two or three litters consisting of five young

BRITISH MAMMALS

are produced during the season, the nest being placed below ground. It hews out a series of burrows, either on its own accord, or commandeers those already made by the Mole.

IV. ORDER UNGULATA, OR HOOFED MAMMALS

Red Deer.—We shall never forget our first sight of the wild Red Deer in its native fastness among the Highlands of Scotland (Fig. 15). It was a day of glorious sunshine in mid-January. The snow crystals glistened like myriads of diamonds as the rays of the sun shed their light upon the white-capped peaks, and these were wonderfully mirrored in the waters of the loch which we were traversing. We were awed by the might and majesty of the scene through which we were passing, the Paps of Glencoe, and the shore-entrance to the scene of the historical massacre on our right, the steep banks of the forest of Morar on our left. Whilst thus engaged, suddenly in the mirrored water, as if deep down among its limpid depths, we saw silhouetted against the rugged grandeur of the reflected mountain-side the images of a small herd of Red Deer! The reader who can best appreciate the scene will be able to realise the magical effect upon the eye of anyone who, steeped in a love for the fauna and flora of his own

BRITISH MAMMALS

beloved Britain, had for the best part of a lifetime promised himself a sight of the proud monarch of the hills. One was not prepared for such an unexpected and unrehearsed happening. If, for instance, we had sud-



Red Deer

Fig 15

denly espied a fine antlered head over the brow of a hill after a hard day's stalking, we should have been more ready to take in the situation. But the mirrored forms fascinated us, and, as we looked up, we saw within a stone's throw of our craft a company of wild Red Deer, standing at attention on a precipitous, rocky ledge, driven from their higher altitudes by the stress of hard

RED DEER

weather. We were told that in this famous Deer-forest of Morar there are not less than ten thousand head of these bold, fine animals, and that at Christmas 1918 several hundreds were slain for the hospitals. When holidaying in Arran we had often heard from the crofters and small tenant-farmers of the tameness of the Red Deer during Winter. We were informed that they were so hard pressed for food that they even approached the door of the homestead. In consequence, many animals are thus captured, a poor reward for the pangs of hunger overtaking them. Yet, on reflection, one must remember the poverty of these sons of the soil, and how difficult it is for them to make a living. They are largely dependent upon the produce and stock they themselves raise, surrounded in their home-life by fowls, ducks, geese, pigs, cows, goats, sheep and other domestic animals, which often share the same dwelling-place as their owners. The capture of a Deer means a good deal to the poorer crofters, hard-working, large-hearted Scotch folk, from whom the family of the author descended when his ancestors helped to raise the standard of Bonnie Prince Charlie at Glenfinnan ; but who, like so many others, had to flee to England after the battle of Culloden in 1746.

As with the flesh-eating aquatic mammals of the Order *Carnivora*, the British representatives of the *Ungulata* are three in number.

The range of the Red Deer must at one time have been very extensive, as fossil antlers and bones are frequently

discovered in places where the living animal has long since disappeared. There seems little doubt that in days gone by it roamed at large over tracts of country where the old forests have been cleared away, and not far from the ancient Common already mentioned as being our favourite naturalising ground, close to our own home, its antlers have been found, and now have an abiding place in Letchworth Museum. This linking up of a neighbourhood, even one's own parish, with animals of the past is very interesting, and we would strongly recommend every boy who wishes to know something of the history of his own district to visit a local museum, and study the fossil remains of animals that have actually been secured within the region. Many schoolboys to whom we lecture on this subject evince great interest when shown local remains of the Tiger, Hippopotamus, Mammoth, Red Deer, Irish Elk, Cave Bear, *Hyæna*, *Ichthyosaurus*, Giant Shark, and a number of other creatures who lived in bygone forests, swamps and seas. Geology has for a long time been the secluded province of the few, and has been so characterised by the usage of scientific terms, that the average individual has fought shy of it ; but with the dawn of what is called regional survey, of which the study of rocks, minerals and fossils is the basis of research, geology will occupy a prominent place in our future surveys, and come into its own. The handsome Red Deer is easily the largest of the three British species, as it stands four feet in height at the withers. The stag or hart (thus Hertfordshire) bears

RED DEER

upon his noble head a magnificent pair of antlers, which give the animal a majestic setting, but from the fossil remains that have been discovered, it seems that the appendages carried by the beasts remaining to-day are small compared with those of their ancestors of long ago. At the age of seven months the male first comes into possession of its antlers. When eventually the complete antlers are borne, these are used by the males for fighting purposes during the rutting season, and it is a mighty conflict to see two stags engaged in combat, and to hear the challenge that is bellowed forth on approach.

The antlers are shed in Spring, or early Summer, but, curiously enough, are rarely found. The sleek coat is dark reddish-brown in Summer, and greyish-brown in Winter. There is a prominent white patch on the rump, and also a short tail. The female (called a hind) brings forth her one young (called a fawn) during Summer, the period of gestation being about eight months. The food consists of leaves, grass, acorns, chestnuts, beech-mast and other vegetable substances. Needless to add, the seeing and hearing powers of the Red Deer are very acute; it is wonderfully fleet of foot, and a good swimmer. It will, when hard pressed, even take to the sea rather than be captured. The tail is known in hunting parlance as the "slot," and that of the female may be known because it is narrower than that of the male.

Fallow Deer.—It is believed that this small species

was introduced into Britain by the Romans, and it is not, therefore, indigenous to our country. It has, however, become established in our mammalian fauna, and may still be found in a wild condition in Epping and the New Forests. Herds also exist in several English parks.

There appear to be two distinct races, one light and the other dark. The brown coat is spotted with white, and this adds greatly to the animal's attractiveness. It has palmate antlers, and a longer tail than its majestic relative last described. It attains a height of three feet at the withers, thus exceeding the next species on our list by some twelve inches.

One or two young are born during June.

Roe Deer.—With this species the male is always referred to as the buck and the female as the doe, and it is interesting to observe that some place-names evidently have reference to this animal in days gone by. Thus, in our own district of Hertfordshire we have Roe Green, Roe Wood and Roestock, whilst at least one of our human acquaintances bears the name of Roebuck ! Curiously enough, although the fore part of the name (Roe) has thus become preserved, the animal itself is little known, and only those fortunate individuals who have visited Scotland and Northern England, to find its own chosen habitat, have any acquaintance with it. Occasionally, this Deer may be sighted away from its forest retreat, but it is a red-letter day when thus seen. It is a lover of a wide expanse of forest where it can roam unhindered, passing most of its time in solitude amidst the murmur

ROE DEER

of leaves and the song of birds. It has its favourite drinking pool, and if the stalker lights upon a Deer engaged quenching its thirst, and manages to see without being seen, a very beautiful sight will be presented. In addition to roaming among the forest wilds, it is said that the Roe Deer will venture from its retreat and make itself at home in districts which have been freshly planted with young trees, such a tempting feeding-ground having apparently an irresistible attraction for it.

When it is discovered, the observer must not expect to locate more than two to four together, as it is not a gregarious animal, although buck and doe remain in each other's company all through the year. The fawns are greatly attached to their parents, and stay with them for the Winter. In colour the buck is reddish-brown in Summer and yellowish-grey in Winter, with a prominent white patch on the hind quarters. The doe is smaller than her mate, and is not so dark in colour, whilst the fawn is yellowish-red during Autumn, and is characterised by the possession of white spots set out in long rows. Unlike the Red Deer, the antlers of this third species are inconspicuous, being small, simple and rounded, consisting, as a rule, of only three tines each. It is very fleet of foot, leaping and bounding with amazing sureness, and can swim with ease and facility.

V. ORDER CARNIVORA, OR FLESH-EATING LAND MAMMALS

Weasel.—This crafty little animal (Fig. 16), sleek-coated, swift-footed and blood-thirsty, is the smallest member of the genus *Mustela* included in our fauna, measuring about twelve inches over all. To many, if not most people, the Weasel is a rare animal. This is largely due to the fact that it is an adept at taking advantage of every bit of cover that is afforded ; but if only the average person had some notion of its habits, and knew how curious the animal was to see all that was passing, it would be seen much more often than it is. If patience is exercised when a Weasel is once located, it is almost sure to show itself again somewhere near the same spot. This is an infallible habit, if the animal is not unduly disturbed during its hunting expeditions, and should be remembered by all those who wish to study this species at close quarters. The fact is, few people realise the wealth of wild life which is to be found for the seeking even in the vicinity of their own homes : maybe in their own back garden. As an instance of the

WEASEL

results of an actual census which we have before us of the fauna of the Firth of Forth, Mr. William Evans records 6,865 local species, of which he himself has met with no fewer than 4,250 during the course of his own investigations. An estimate that was made gives a round total of 10,000 species of animals for the area in question, among the chief numerical groups being *Insecta* with 5,700 species; *Protozoa*, 800-900; *Crus-*



Weasel.

Fig 16

tacea, 850; *Arachnida*, etc., 550; *Mollusca*, 375; *Rotifera*, 270; *Aves*, 260; *Pisces*, 145, and *Mammalia*, 53.

The splendid work accomplished in the Forth area by so many devoted investigators in these various branches of Natural Science might well be followed elsewhere, for this localisation of actual field-work is of invaluable service, and as Gilbert White has written: "Every kingdom, every province, should have its own monographer," to which statement the late Professor Alfred Newton adds: "And experience has proved the

BRITISH MAMMALS

truth of his assertion." We cannot all expect to attain the remarkable results of Mr. William Evans's first-hand work already referred to ; time and opportunity do not favour us thus far, but each one of us can undertake some group, or department, which, when fitted into its proper place, will help to build up a system for the nation. The work of Local Natural History Societies has not received the encouragement and support which many of them deserve, and there is more need than ever for enthusiastic observers and recorders in the various sections of which Nature-study is composed. There is a wealth of information still to be gathered together concerning our British mammals. The full life-story of even one species has yet to be secured, and when one has watched the Weasel and noted its habits, upon turning to a reliable work of reference, one is struck with the number of interesting points that are unmentioned. Great confusion still exists among those who merely take a fleeting interest in animal life as to the difference between a Stoat and Weasel, and we could number on the fingers of one hand those of our friends who are qualified to state definitely which of the two species they have had under observation. Let it be stated, therefore, that the Weasel is a good deal smaller than the Stoat ; that it does not possess a black tip to the tail ; that the upper coat is not nearly such a warm brown, and that the under-parts are whitish and not yellow. It dearly delights in hunting along a hedgerow, threading its way with great cleverness as it proceeds. One hears

WEASEL

a rustle among the herbage, and that is all. This is the signal to wait and watch. Presently the gliding form of the active little beast will be sighted, and many interviews which we have had with it have been as a direct result of exercising patience when undertaking our field excursions. Often in the Spring, before home cares demand closer attention to the five or six young, we have disturbed both Stoats and Weasels bird-nesting. They show a preference for the eggs of Blackbirds and Thrushes, and will climb bushes and trees in search of same. Their fondness for the eggs of ground-nesting birds, such as the Partridge, Corncrake and Pheasant is also well known. Mention has already been made of the way in which this member of the *Carnivora* performs good work in preying upon Rats, and it will also attack Voles, Moles and Birds

It has two or three litters during the year, and to see a family party on the trail provides a most interesting episode connected with wild life. The parents are most solicitous for the welfare of their brood, but when attacked show fight in no uncertain way.

Besides hedgerows, the Weasel, as with the Stoat, haunts woods, copses, plantations, large gardens, stacks, farmyards and similar places. It is a typical four-footed inhabitant of rural England, and, in spite of man being its remorseless enemy, it manages to keep up its numbers to an astonishing degree.

Stoat.—Much that has been written of the Weasel applies equally well to the Stoat (Figs. 17 and 18). Like

BRITISH MAMMALS

its smaller relative, it is an inveterate hunter, and although it is frequently trapped at night, there is little doubt it is abroad by day, as we often observe it during our rambles in the country. It is a lithe little beast, ferocious when cornered, but it has the unfailing habit of entering enclosed box-traps set in a hedge-gap or gateway by game-keepers, and is thus easily captured. It is a distressing sight to find a Stoat firmly secured by the



Young Stoat.

Fig 17.

cruel teeth of a spring trap, and more than one animal we have seen made prisoner in this way has managed to escape minus one of its limbs. Rambling along a Hertfordshire lane a few Summers ago, we found a Stoat that had recently been run over by a motor. The poor beast had evidently been run down unawares, and an examination revealed that, some time previous, it had been caught in a trap, as its left fore-foot was amputated, and the wound had healed, so that the owner was able to hobble about on the stump remaining. It was sad to think that such a plucky creature eventually

STOAT

met an untimely end in the manner indicated. To watch a Stoat pursuing a Rabbit shows another side of the picture. Once the rodent is marked, it possesses little chance of escape. Its movements, unless they lead it to its underground dwelling, are slow compared with those of its pursuer, and when at last it has to give in, the screams it sets up are pitiful to hear. A final leap by the carnivorous hunter, and all is over. If the Stoat is interrupted in its quest, a watch should be kept, when it will be seen to return to its prey, and, if needs be, will



Skull of Stoat. Nat. size.

Fig 18

carry it off triumphant to suck the blood of the Rabbit in quiet security. It also preys upon Birds, Rats, Voiles and Leverets, and in the nesting season is an inveterate enemy of the Pheasant. We have known a pair of Stoats hoard up as many as seventy eggs of the last-named game-bird, much to the discomfiture of our game-keeper friend who was with us when the discovery was made. Admirably fashioned for the life it leads, having a long tapering body, short legs, extremely muscular limbs, and full of activity, cunning and great daring, small wonder this species is such a common

inhabitant of our country. It measures over all a length of about seventeen inches, the tail accounting for at least six and a half inches. The female is smaller than her mate. The coat is warm reddish-brown, with yellowish-white under-parts, and the long bushy tail is tipped with black. In the North, and occasionally in the South, the Summer coat is in Winter replaced with white, when the Stoat is then known as the Ermine. During infancy the five to eight young are totally blind ; but as the female looks after them until Autumn, they are well cared for. It is related that " packs " of Stoats are sometimes encountered in the fall of the year ; and that when this happens, danger threatens anyone who comes in contact with them. We have never yet met with this phenomenon ourselves, and the reader would do well to devote some attention to the life histories of these creatures of the wild so as to add to our knowledge concerning them.

Polecat.—Compared with the two foregoing, the Polecat (Fig. 19), the last of the three representatives in Britain of the genus *Mustela*, is extremely rare, and there are few districts in the southern and midland counties where it now occurs. War has been waged so relentlessly, and for so long a time, upon these flesh-eating mammals, that their numbers have become greatly reduced, in some instances almost to vanishing point. The Polecat has certainly ceased to exist in districts where we met with it when we were boys, and we are not ashamed to confess that the last southern specimen we saw was *released*

POLECAT

by us from a trap, much to the annoyance of the keeper, who happened to put in an appearance just after the deed was accomplished !

Six members of the *Carnivora*, included in this volume, claim kinship with the family *Mustelidæ*, but they are relegated to four different *genera*, thus : *Martes* (Pine Marten), *Mustela* (Weasel, Stoat and Polecat), *Meles* (Badger), and *Lutia* (Otter). To complete the



Polecat.

Fig 19

classification, the Wild Cat belongs to the genus *Felis* or Cat tribe, and the Fox to the genus *Canis* or Dog tribe. The Polecat is attired in a rich fur coat of dark brown, with tawny or yellowish under-parts, and a bushy tail. There are some white markings near the ears and mouth. It attains a total length of about twenty-four inches, and a weight of about six pounds. Very often escaped Ferrets are incorrectly chronicled as belonging to this species, to which animal the former is, of course, closely related. The depredations of a Ferret which is insufficiently housed and makes good its escape are, at

times, alarming. One very fine specimen shown in Letchworth Museum has a self-coat of yellowish-white, and pink eyes. It paid the penalty of death because it raided a hen roost at night, and, with the help of a mate, accounted for the decrease of over thirty valuable hens in double-quick time.

It is interesting to notice that, in addition to preying upon poultry, rabbits, game-birds and ducks, the Polecat also takes frogs and toads, and, being an expert swimmer, it is able to secure eels. Its appetite requires much satisfying, and, in the same way as the Fox, its lust for killing is such that it often slays more than it can possibly eat. It carries out its pilferings under the cover of darkness, and it does not require very keen scent to detect the disgusting odour which it emits, nor to disassociate it from any animal upon which it has preyed.

Woods, plantations, and even more open country are frequented, and in the fore part of Summer a litter of from four to six young are produced, an untenanted burrow of a Rabbit being often used for breeding purposes.

Pine Marten.—This species is commoner than the Polecat; but even so, its days are numbered. Its chief stronghold seems to be the mountainous districts of Derbyshire and Cumberland; but it also occurs in Ireland, Wales and Scotland. In days gone by, its haunts must have been much more extensive, as is proved by fossil remains that have been found in many

localities. Occasionally a stray individual is recorded from a southern county, but this may be considered of rare occurrence. It exceeds the Polecat in length by several inches, and has a rich, glossy, brown fur, with yellow on the throat and chest. The odour given off by the former is not repeated in the Marten, a fact of considerable interest in view of their close affinity. When, as it also does, our present species frequents woods and plantations, it climbs trees with much adroitness, and will commandeer the old nest of a bird or Squirrel in which to shelter its young. These vary in number, from four to five usually being brought forth, and there are two or more litters during the year.

The Pine Marten preys upon birds and their eggs, small mammals and reptiles ; but as it is mostly of arboreal habits, one assumes that ground-dwelling animals are rarely taken.

Wild Cat.—This handsome, though ferocious, wild tenant of the Scottish Highlands (Fig. 20) is the only British representative we have of the Cat tribe. Domestic pussies which have been allowed to run wild, and, in consequence, have adopted poaching habits, are frequently incorrectly recorded as *Felis catus*, and we were assured quite recently of a specimen of the true Wild Cat being seen in Cambridgeshire. This, however, is open to grave doubt, and we cannot accept the report.

We have ourselves seen so many fine domestic Cats thriving as a result of their nomad life, fierce, ill-tempered

and savage beasts, and resembling in general appearance the magnificent creature now under consideration, that small wonder need be expressed at mistaken identity by those who do not expect to discover a Cat miles away from home, living a wild, free life in woods far removed from the haunts of men.

Under the happiest conditions, the domestic Cat



Wild Cat.

Fig 20.

(which is, it is believed, descended from an Egyptian species, and not from *Felis catus*) is, as is well known, a great lover of straying from the fireside and hunting Birds, Rabbits, Mice, Rats and other creatures; and in the Spring of the year those of us who love birds, and yet have a warm place in our affections for pets, experience difficulty in condoning the offences committed by our own feline companion. Whilst, then, it is probable that *Felis caffra* of Northern Africa is the rightful ancestor of the

Cat which sits contentedly purring by the hearth, there seems little doubt that stray pussies have interbred with the Wild Cat, evidence of which is brought to bear when one remembers the abundance of tabbies which exist to-day.

In general colouration the true Wild Cat is yellowish-grey, with a dark, interrupted stripe along the back, two dark bands upon the cheeks, several obscure, transverse stripes on the massive body and limbs, and a prominent bushy tail, which is shown off by rings, and a tip, of black. The long, soft fur; large, bright eyes, wide muzzle, strong legs, conspicuous mittens and ears, are other features of interest. The male attains a length of almost thirty-six inches. The female is smaller and lighter coloured.

Fossil remains go to prove that in past times the Wild Cat was widely distributed in our country, when there were large tracts of uninhabited territory where it could roam at will in company with other extinct animals which flourished in Britain when its mammalian fauna was vastly different to what it is at the present day. Climate, and its influence, has had much to do with the extinction of these creatures of long ago, though, on the other hand, it must be admitted that the changes which our land has undergone accounts in a large measure for the variety of the faunal and floral life we are now able to claim. As civilisation extended westwards, its effect was bound to stamp out various forms of wild life, which for so long a time had held undisputed sway, and to this,

together with climatic conditions, has to be attributed the changes which our mammalian fauna in particular has undergone.

In the far north, where the extensive forests and untenanted mountainous districts still remain very much as they were many centuries ago, the Wild Cat still survives. There, amidst the eternal fastnesses, it pursues its calling, hunting birds, mice and other creatures. It selects a hollow tree, rock crevice, or dense under-growth as its lair, producing a litter of five or six young soon after Summer has set in. The female shows great solicitude for her young, and attends to their wants until such time as they are able to hunt for themselves.

To encounter a Wild Cat in its native fastness is no easy matter, especially if the animal is wounded. It is full of courage and savagery, and those who have had experience of a domestic Cat caught in a woodland trap will be able to form some idea of the ferocity of *Felis catus* when at bay. In the march of civilisation this bold, handsome carnivore has had to go, and, although we may still claim it as a wild inhabitant of the northern portions of our island home, it merely exists as a remnant of its former self, and its days, like those of the Pine Marten, are probably numbered.

Fox.—It is probable that but for the protection afforded to the Fox because of its popularity for hunting purposes, it would long since have joined its cousin, the Wolf, as an extinct British species. The last Wolf seems to have been secured during the eighteenth century,

which, as time goes, is not so long ago ; indeed we learn that in the sixteenth century Wolves were by no means uncommon in Scotland, the home of so many wild creatures who flee to the mountains and solitudes of the north as a last resource. Every school boy and girl is acquainted with the sagacity and cunning of this, our only member of the Dog tribe, and many stories might be related concerning it. Two instances must suffice. A Fox was caught in a trap by one foot, and, rather than be taken prisoner, it had the courage to amputate its own limb, and thus make good its escape. On another occasion a friend was walking along a cliff in Yorkshire, and saw a Fox just ahead of him. As our friend approached, the animal suddenly rolled over, as if in a fit, and remained stiff and motionless. Thinking the animal had suddenly died, our friend examined it, and then passed on his way. After proceeding some little distance, he turned round to make quite sure that he had not been deceived, when, to his consternation, he saw the Fox bounding across the moor at full speed ! The crafty Reynard had feigned death as a means of escape.

Of its thirst for blood much might be written. We have known it kill thirty-six Pheasants in a quarter of an hour, and to completely raid a well-stocked hen-roost by biting off the heads of the feathered company assembled. It also preys upon Rabbits, Hares, Ducks, Partridges and other birds, Hedgehogs, Rats, Mice and large insects. These depredations are carried out at

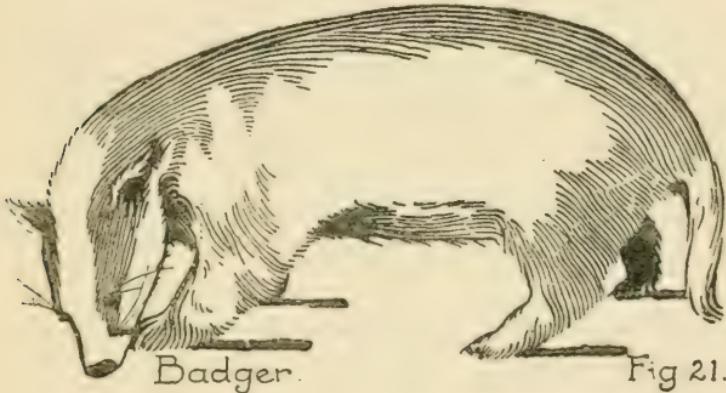
night, and although it may occasionally be seen during the hours of daylight, it does not seem to hunt except under cover of darkness.

Sometimes it excavates an "earth" unaided, but it will take up its quarters in the disused burrows of a Rabbit and enlarge the apartment, or it will share the same abode as the cleanly Badger. The Fox is untidy in its home life, and various garbage is to be discovered wherever its haunts are found. Occasionally it rears its cubs above ground in the stub of a tree, or under the crevice of a rock or large boulder, but it is mostly a dweller below the soil, only appearing above the surface when the pangs of hunger necessitate a hunt. It is a solitary animal, though both dog and vixen are much attached to each other, and much care is bestowed upon the pretty cubs, which are dressed in a dark, fluffy coat, and have snub noses. They are born blind during the early days of Spring. The adult Fox is reddish in colour, with some grey. On the under-parts and tip of the tail it is white. The head and legs are marked with black. Length about forty-eight inches, including the fine brushy tail. It is said that this prominent appendage is sometimes used for the purpose of attracting prey, the Fox lying down on the ground and waving its brush so effectively as to attract other animals, more out of curiosity than anything else. When within pouncing distance there is little chance of escape for the unwary victim that has approached. Possessed of keen powers of scent and hearing, capable of great endurance, and

BADGER

having remarkable travelling facilities, never giving in until escape is well-nigh impossible, the Fox, in spite of its failings, is an intensely interesting species, and may the day be far distant when it ceases to hold an honoured place in our country's fauna.

Badger.—This very intelligent mammal (Fig. 21) is commoner than is generally supposed. Being entirely nocturnal, it is rarely seen, and, with the exception of



game-keepers and sportsmen, few people are aware of its presence in any given locality. We know, for instance, of several Badger's "earths" in our own neighbourhood, and more than one boy of our acquaintance has, at our suggestion, undertaken an all-night vigil in his endeavour to obtain a sight of the wily Brock as it came above ground to hunt for food. It is no light task to sit cramped up in a tree near a Badger's haunt on a moonlight night on the off-chance of having a fleeting glance of the soft-footed hunter as it passes quickly by ; but the

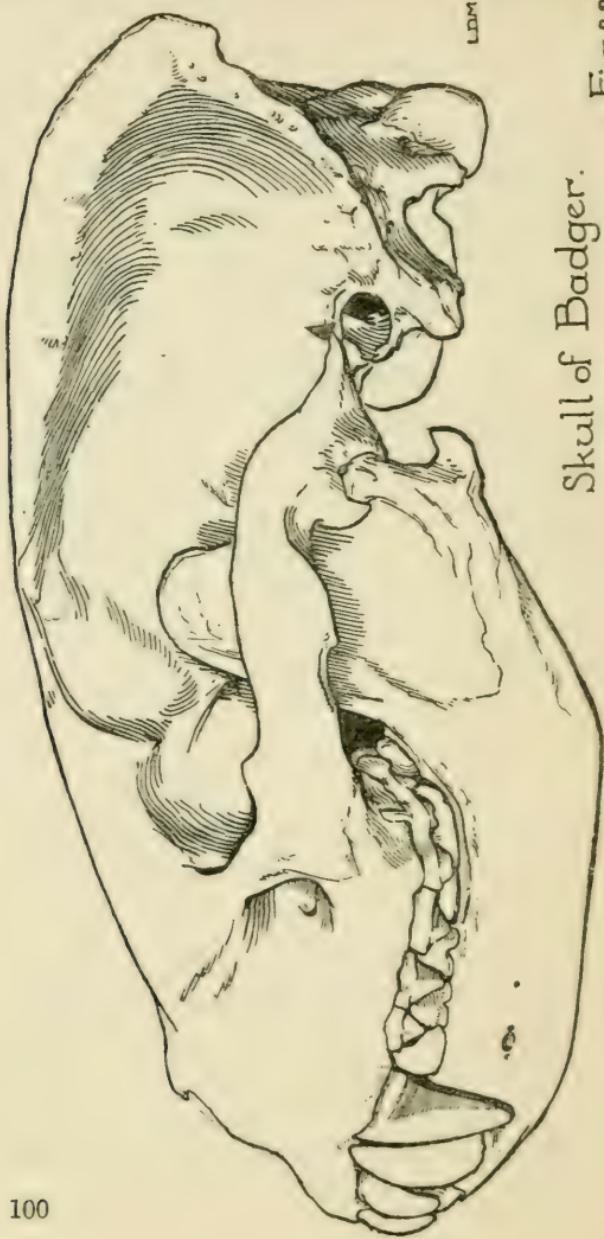


Fig 22

Skull of Badger.
Nat. size.

observer is amply rewarded if success crowns his efforts, and the experience, even if it has no direct results, has an air of romance which appeals to any boy whose nerves are sufficiently strong to enable him to undertake the task of night-watchman in a sequestered wood where *Meles taxus* is known to dwell. Silence must be preserved at all cost, the wind must be blowing *from* the "earth," as the Badger is very keen-scented, and any suspicion that danger threatens is soon aroused.

If the parent animal is seen, the onlooker can count himself fortunate indeed ; but if, in addition, the young are also observed playing around their underground abode, one of the most entralling episodes in the wild-life pageants of rural England will have been witnessed.

Acute of both scent and hearing, it is impossible to catch a Badger unawares, as it bolts to "earth" immediately its presence is detected. Seen under natural conditions, the observer, pent-up with excitement, will have some difficulty in controlling his emotions ; but steadiness of purpose, and a knowledge of woodcraft, will accomplish much. As it proceeds on its way, Brock utters a grunting noise as it pursues its midnight pilgrimage, ambling along on its knuckles, and thus protecting its sharp-nailed toes. The shaggy coat is yellowish-grey in colour, varied with black. There is also black on the limbs and under-parts of the body, with a conspicuous black streak running longitudinally on each side of the white face, and passing through the eye and ear. The length over all is about thirty-six

inches, the hairy tail only accounting for about seven inches. Although not as long as the Fox, or Wild Cat, the Badger is a heavier animal than either of these, and is the weightiest of the *Carnivores* we now have resident among us. The male is known as the dog, the female as the bitch. In days gone by, Badger-baiting at fairs and other rural festivals was considered great sport; but those days have passed, and we are now concerned in an endeavour to promulgate the law of live-and-let-live, though, perchance, converts may be few! But this Badger-baiting of old goes to show how common this species was, and its alternative name of Brock is still perpetuated in certain districts known to us, where, even to-day, the animal is by no means uncommon. It is said that the name of Brock was conferred because of the striped black and grey face which forms such a prominent part of its appearance. A wooded hillside, where naught but the huntsman's horn or the forester's axe disturbs the peace year in and year out, is a favourite place of abode. In such a position, among the ramifications of the trees, the Badger throws up enormous heaps of earth, and an examination of the entrances during the day will soon provide evidence as to whether Brock had been on the prowl the night previous. The finest series of "earths" we have examined are situate in one of the beautiful wooded hillsides of a sequestered Cornish valley; but, within half an hour's walk of our own home, we can visit a well-frequented Badger's abode over which children trample in search of Primroses and Bluebells,

OTTER

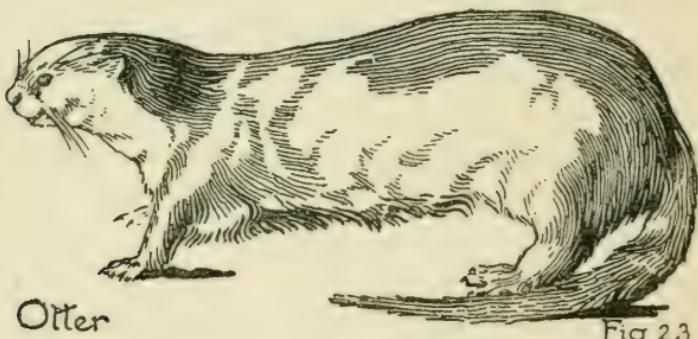
and more than one picnic party has, all unconsciously, assembled on the inviting mound under the shadow of the trees ! If an "earth" is opened, it is found to consist of various apartments, all scrupulously clean and well-apportioned. Maybe a Fox has secured lodgings there, too, and if this happy state of affairs is existent, then one can tell at a glance which is the better house-keeper of the two animals, the Badger's tidiness being in strange contrast with that of its crafty lodger. The grassy nest is secreted within the burrow, and here three or four young are produced in early Spring. They are blind at first, and do not leave the security of their underground home until they are well able to fend for themselves.

The diet is of a varied nature, consisting of roots, fruit, birds' eggs, small mammals, frogs, reptiles and insects. One further point of interest is that, like the dandy Dragon Fly, the Badger can travel equally well backwards or forwards ; the insect, of course, careering through the air, the mammal over the ground.

Otter.—This, the last member of the carnivorous land mammals with which we have to deal, is one of the most elegant of them all, and although rarely seen except by river-keepers and anglers, the Otter (Fig. 23) is to be regarded as a most beautiful and engaging creature, and a distinct acquisition to any stretch of water that it frequents. Unfortunately, as we ourselves can testify, it commits much havoc where Trout are reared, and several fine animals have passed through our hands which

BRITISH MAMMALS

had paid the death-penalty because of their depredations. One magnificent dog Otter, which was captured when in the act of feeding upon a large Trout weighing six pounds, turned the scale at twenty-nine pounds, but this may be regarded as a very fine specimen. It was secured a few years ago on the River Ivel at Radwell Mill, near Baldock, Hertfordshire, and was for some time on exhibition in Letchworth Museum. It is now in a



private collection. Our friend who captured this fine specimen assured us that the loss of every Trout of similar size to the one upon which the Otter was feeding, meant the loss of £5 to him, and as it was his living to rear the fish, one can understand his desire to keep in check one of his greatest enemies. For the same reason the beautiful Kingfisher had to be killed, as small ponds, teeming with yearling fish, proved an unfailing source of attraction to this handsome British bird. No less than two hundred of these birds were destroyed on a small stretch of water within a few years, a sad enough pro-

OTTER

ncouncement for any person steeped in a love for one of the feathered jewels of earth, but a plain statement of fact notwithstanding.

The deep, glossy, brown coat of the Otter, with whitish beneath, the long furry tail, partly webbed toes, prominent mittens, wide muzzle, large, bright eyes, and small ears are features of interest ; but it is astonishing to notice the ignorance that still prevails among the general public as to the exact identity of an unfamiliar animal. The large dog Otter above mentioned was, in spite of its printed label, a source of grave misconception on the part of many visitors to the Museum of which we are in charge, and when, as so often happens, incorrect information is handed on to growing children, the pity of this folly is all the greater. As things are at present, the rising generation are putting their elders to shame in the display of Natural History knowledge. This augurs well for the future, if the young folk will only *apply* their knowledge in a proper channel, for, after all, as we grown-ups discovered long since, a little knowledge may be a dangerous thing, but is, nevertheless, a source of both inspiration and delight.

The Otter measures about forty inches, including the long, thick tail. Its lair is known as a "holt," and when hunted by dogs, a "find" is usually anticipated when a "holt" is near at hand. In addition to streams and rivers, it frequents the seashore, where it resorts to rocks, caves and other places of refuge. The young number from three to five, and are born in early Spring.

BRITISH MAMMALS

It feeds exclusively upon fish, in securing which it shows great cleverness, diving, swimming and pursting its prey with much grace of movement. It is wonderfully adapted for its mode of life, being equally at home on land or in the water.

AQUATIC MAMMALS

VI. ORDER CARNIVORA, OR FLESH-EATING AQUATIC MAMMALS

Common Seal.—The three commoner species of Seals which are entitled to inclusion in this volume all claim kinship with the family *Phocidæ*, though the Great Grey Seal belongs to a different genus, *Halichærus*. The two others are included under the genus *Phoca*. They are fin-bearing, fin-footed amphibians, belonging to the flesh-eating aquatic mammals, and although those which regularly or occasionally frequent British waters are of no value commercially, they are often slain at sight without any court of enquiry being held as to their guilt of feeding upon creatures utilised as food by man.

Our British Seals, for example, are accused of preying upon Salmon, but one careful observer states that during most of the year the food consists of Flounders, of which fish there are enough in the sea and to spare.

Exposures that have been made from time to time go to prove the wilful butchery of Seals in northern seas for the sake of their skins. Man is, perhaps, the

most destructive animal of all, though he has egotistically styled himself the lord of creation ! Some day, perchance, men and women everywhere will recognise the rights of these wild tenants of earth, water and air, and be imbued with a greater sense of justice in regard to them. They share with us all a common heritage, and where not inimical to man's interests, should be allowed to live their little day unhindered. It is probable that they obtain a higher share of success than we humans do. They may see greater reward for their labours. Man struggles on. Peace dawns for a few blessed years, and then nations rise one against the other, the whole fabric of civilisation is rent asunder, and civilisation is once more in the melting-pot. Human existence seems mostly to consist of unfulfilled possibilities ; but with earth-creatures it is different. They share life with and around us, but (and probably fortunately for them) they do not consciously possess ideals as we do. Man sows, and he often reaps such fruit as makes the angels weep. Some among our fellows look at the sun rising and setting, and in its imagery get as close as they can to a divine presence, but the rank and file pass by on the other side. The life of the earth-creature is fulfilled in the living. Nature *may* be red in tooth and claw, plants may endeavour (and very often successfully) to throttle one another in the great struggle, but to these wildlings death just comes as a release and accomplishment. They have no disillusionments and defeats. They live, they prosper, and multiply exceedingly. They attain their

purpose, they acquire that for which they set out. They beautify and replenish the Earth, and their appointed place in the economy of life having been reached, they are content to pass on their way, taking good care to so arrange things that all the possibilities of their nature are realised, and the future destiny of their race assured. They actually reach, within certain prescribed limits, full perfection. Man, on the other hand, is never satisfied. If he finds nothing else to grumble about, he falls back on the weather, condemns the climate, which, in Britain at all events, has meant so much to him, and generally becomes a bore and a nuisance to all with whom he comes into contact. But as our friend W. J. Jupp so well says by way of comparison : “A Blackbird fluting in the woods at evening, a Skylark heralding the dawn with notes of jubilant praise, a Wild Rose spray poised in the Summer air, a Snowflake with its crystals shaped to such excellence of symmetrical form, a Rainbow spanning the cloud-mist for a few moments at the close of a day of storm—these things leave nothing to be desired ; they are faultless and complete, after their kind.”

We were tempted to write thus because of the butchery among the Seals ; but these thoughts must assert themselves in the minds of every right-thinking man and woman, boy and girl. We, all of us, inhabit worlds not realised, and at times the consequent depression is so great that striving after an ideal results in bitter disappointment. A few succeed, the many succumb.

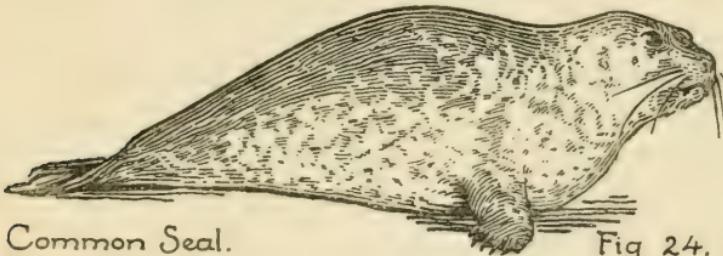
Man's consciousness of evil or well-doing, of dreams that have not come true, baffles the greatest philosophers and seers, and had we not faith in the unwritten law that controls, regulates and fashions human life and endeavour, all would assuredly be lost. After all there is magic and mystery about this precious thing called *life*, and we must have abundant faith in a higher power which our inner consciousness tells us will triumph in the end. But we must direct our energies in the right path, and to the best of our ability. Duty, misapplied word, should be indelibly stamped upon the forehead of every good citizen, and in concluding our brief exploration into the realm of psychology, we may quote an old Latin epigram, which reads thus: "In essentials unity, in doubtful questions liberty, in all things charity." Some there may be who will accuse us of sentimentalism in writing as we have done, of introducing a matter which is out of place in a popular scientific treatise devoted to mammal life, but these comparisons between earth-creatures and human folk are of supreme interest, and form basic principles upon which the whole concept of existence is built up.

To return to concrete facts, after this divergence, brings us again to the animal under review (Fig. 24), which, it should be noted, is mostly an inhabitant of our northern estuaries, though we recently had an authentic record of its occurrence on the Wye in Herefordshire. Sometimes it even travels as far as the Thames, and, when seen, always provides a crowd of curious sight-

GREAT GREY SEAL

seers. Its dress is brownish-grey, spotted with dark brown, with lighter on the under-parts, and no spots. It has a small head and face, but there are no external ears in any of the species that inhabit British waters, and an absence of what is called under-fur. This latter deficiency accounts for the non-commercial value of the "pelage," as the skin is termed.

A fact of interest is that, during infancy, young Seals are attired in a white fur, and it is with some reluctance



Common Seal.

Fig 24.

that they take to the water until the overtures of their parents entice them to do so. The Common Seal is a gregarious animal. The limbs, as is well known, are modified into flippers, so as to enable the creature to live an aquatic life. On land it is awkward and ungainly. The water is its rightful home, and there it passes much of its time, coming to land to rest and bask, when its fishing exploits are at an end.

One, or at the most two, young are born in early Summer.

Great Grey Seal.—A full-grown male of this somewhat restricted species attains a length of about eight

feet or more, and an instance is recorded of an eight-feet long specimen which turned the scale at almost four hundred pounds. It has silvery, or yellowish-grey, fur on the upper parts, with light underneath, spotted with blackish or dusky. Great variation, however, exists, and no hard and fast rule can be laid down. This Seal is of exceptional interest because it produces its young in the Autumn, and in the wind-swept, sea-washed Isles of Shetland it frequents exposed positions from September to November for breeding purposes. It is very acute in its powers of scent and hearing, and, before landing, swims to and fro several times so as to make quite sure that the coast is clear. It does not always land at the same spot, as the water conditions largely control its movements, and when it does eventually leave the water, it always takes the precaution to turn around and face the sea, so that it can at once slip off the shelf of rock upon which it is resting. Sea birds resort to the same method ; that is, they perch on the rocks with their heads towards the water, so as to be ready to fly seawards if danger threatens. It seems, too, as if the Gulls have scouts, or sentinels, always on the alert, as at a given signal the whole feathered company take to flight, and follow their appointed leaders. Less docile than the Common Seal, the Great Grey species does not permit itself to be tamed in the same way as, for example, the beautiful Californian Sea-Lions which are such a source of attraction at the London Zoo, where one can watch their diving, swimming and other movements at close

HARP SEAL

quarters, and obtain a capital idea of the manner in which these intelligent fin-footed mammals pass their time.

Harp Seal.—This, the last species on our list, is also known as the Greenland or Saddle-backed Seal, the latter name being conferred because of the dark markings on the back and sides of body, and Harp by reason of these markings bearing a resemblance to the shape of the said musical instrument. The general colouration is yellowish-white, or white, with the nose and forepart of the head black, and the darker colour on the upper parts and sides as indicated. It is a much smaller species than the Great Grey Seal, only attaining a length of from five to six feet, and when it is immature (it does not acquire the adult attire until it is five years old) may easily be confused with the common species. Indeed at various stages of its existence it is somewhat puzzling, except to the expert, and the inhabitants of Greenland have given it different names according to its different stages. It lives in the far North, and its visits to British seas are of infrequent occurrence. It carries out a series of most interesting migration movements, but is rarely known to land on shore even for breeding purposes, preferring an ice-floe, which is a more secure abode for this ocean-loving species. On account of this habit of resorting to a floating island of ice, it is not necessary for the Harp Seal to make a breathing-hole in the ice-pack as other species do.

It is said that in spite of the war that has been so

mercilessly waged upon it, its numbers exceed those of all other Seals put together, and as examples of their immense herds in days gone by, it may be mentioned that in 1866 one steamer killed no less than 22,000 in a little more than a week, whilst in Newfoundland the number obtained every year used to exceed 500,000 individuals. It must be an exciting experience to see enormous ice-floes thickly populated with these gregarious animals, and to listen to the barkings of the assembled companies. The voice travels a great distance over the face of the desolate ice and water, and can be heard several miles away. The young are born during early Spring, and they are at first attired in a furry coat of white, or yellowish-white, but this is exchanged for one of hair after several weeks have passed.

This species is also accused of feeding largely upon Salmon, and of sometimes ascending our English rivers with this end in view, but our knowledge of its whole life-history is incomplete, and will probably never be written.

VII. ORDER CETACEA, OR WHALES

Hump-backed Whale.—We have now to include in our survey of the British mammals the largest animals of all. As the Elephant is the bulkiest land-animal existing to-day, the Whale is the heaviest monster of the sea.

Whales are sub-divided into two orders, one, the *Mystacoceti*, containing those species which possess whalebone plates (and hence are toothless); the second, the *Odontoceti*, claiming those species which are toothed. To the former the Hump-backed and Common and Lesser Rorquals belong; to the latter the Bottle-nosed and Common Dolphins, and the Common Porpoise. Whilst there are twenty-one species of Cetaceans on the British list, most of these are rare visitants to our seas, and it will serve our present purpose to state the chief features of three of the commoner representatives of each sub-order. Our first species, the Hump-back, has been thus named because of a hump on the back, and a fold of skin which it possesses along the throat.

BRITISH MAMMALS

It is the only British species included in the genus *Megaptera*, measuring about fifty feet in length, and is black in colour.

In spite of their massive bodies and huge proportions, (a specimen which was stranded off the Yorkshire coast it was estimated weighed seventy tons !), Whales are tenderly solicitous for the welfare of their young ; the mother Hump-back in particular being provided with long arms by means of which she not only lashes out at her enemies, but also uses them for carrying her young calf through the depths of the sea. This motherly care on the part of the monarch of the deep is of great interest, for, if not thus protected from Sharks and other predatory creatures, the young Hump-back would doubtless fall an easy prey to their cunning and ferocity.

The young calf is, it must be remembered, only a slim-built creature a few feet in length, and appears to have little or no idea of the dangers which beset it, as rather than be tenderly hugged to its mother's side, it does everything possible to escape from her protective clutches ! The mother, ever anxious for the security of her ill-mannered babe, makes for a hiding-place when pursued, and will even remain hidden sufficiently long to run the risk of starvation rather than allow her young to be taken. The male is known as the bull ; the female as the cow ; the young as the calf, and it must be an engaging sight to witness all three playing about together when no danger is near. This, we are assured, they are fond of doing. Whales, being mammals like ourselves,

HUMP-BACKED WHALE

are, of course, provided with lungs. They do not possess gills as in fishes, and, in consequence, have to come to the surface to take in a fresh supply of air. The skin is smooth, without scales, and the body is encased with large quantities of blubber, which is a provision against the heavy water-pressure under which the animal lives. The young are, of course, brought forth alive, and are suckled by teats in the same way as those of other mammals.

The so-called whalebone of these toothless Cetaceans is situate in the top jaw, and there are some six hundred elastic plates in all. These serve the purpose of an enormous fishing net and sieve, as the toothless Whales feed upon countless myriads of small organisms, and are incapable of swallowing food of large size. Minute crustaceans, called pteropods, are mostly taken, and when a mouthful of this small food is secured, the water is strained out between the plates of baleen, leaving the food behind, and any matter secured which is not of use is left stranded upon the plates of baleen, or "whalebone," and is eventually rejected by expulsion.

The toothed Whales seek larger prey, being voracious feeders, and swallowing fish whole.

Common Rorqual.—This species also feeds upon small crustaceans, but there are less whalebone plates, and the animal is not so heavily supplied with blubber as in the foregoing. It is, nevertheless, an active creature when seen in its native element, and is enormously powerful. A specimen which became stranded near

Scarborough in March, 1910, measured fifty feet in length, and when thirty people were doing patrol duty around its huge carcase, there still remained a clear view of the monster's body. It was stranded between some low-lying rocks at the foot of the cliff, and was eventually cut up and buried ten feet below the land surface by order of the Board of Trade, who made a grant of £28 for this purpose. This 1910 specimen of the Rorqual measured seven feet in depth and nine feet in width, and when first discovered it was still alive. Although fifty feet in length, it was not a full-grown individual, as another specimen which was towed into Scarborough Bay in September, 1900, was seventy-three feet in length, and a smaller one of thirty-six feet was washed up in Burniston Bay in November, 1907. Other kinds of Whales which have been noted at Scarborough within recent years are the Killer, or Grampus, and the Beluga, or White Whale, the latter being a very rare visitor to British waters.

The reader can imagine the sensation caused by the occurrence of a stranded monster Whale, and the large number of people who pay it a visit. The comments of many of these visitors are ludicrous in the extreme, and it required much persuasive power to convince the incredulous amongst those who assembled that the Whale is a warm-blooded mammal and not a fish, and that the specimen exhibited was not a foreign creature, but, with other relatives, is an inhabitant of the adjacent North Sea. Many of the visitors to the Scarborough

Rorqual did not leave the dead body of the sea-monster until they had, as they considered, become the proud possessors of one of its "teeth," when, as has already been shown, it does not possess any! The souvenir was, as a matter of fact, a piece of the so-called whalebone. There appear to be few, if any, naturalists or whale-hunters who have ever sighted a young Rorqual, and it has been suggested that the cow is so secretive in her habits at such time as she bears her calf, and thereafter so jealously cares for her offspring, that she chooses an ocean retreat where it is not possible for human eyes to penetrate.

In the *Scottish Naturalist*, Prof. D'Arcy Wentworth Thompson has contributed several important reports on Whales landed at the Scottish whaling stations, especially during 1908-14, dealing on this occasion with the Bottle-nose, Hump-back and Finner Whales. Of these, the first one is evidently not an uncommon visitor to the Firth of Clyde, being frequently reported, but the other two have, so far, no fixed place on the Clyde list. The most important one of the three, from the Whale-fisher's point of view, is the Finner, or Common Rorqual, the "Herring-Whale" of the Norwegians. It forms the greater part of the catch at all our Scottish whaling stations. Between 1908-14, 2,409 Finners were caught out of a total of 3,959 Whales. The sexes are, on the whole, equally balanced. Females much predominate among the larger sizes. Thus while among Finners, of 50 feet and over, the females are 50.2 per cent., they

rise to 53.8 per cent. of those of 60 feet and over, to 82.3 per cent. of those of 70 feet and over, and the only two over 80 feet were females. The season stretches from April to September, but July and August are the months for the largest catches. The catches are chiefly made west of St. Kilda and north of the Shetlands. Though generally considered a fish-eater, Mr. R. C. Haldane says of the Finner that it only takes to herrings when it cannot get its favourite kril and shrimps, and that in some years they seem to be "entirely shrimp-fed." A Finner 60 feet long has a girth of 23 feet. A Bottlenose, full grown, of 30 feet in length, would measure 20 feet in girth, proportions very different from those of the Finner. Only twenty Bottlenoses were landed at Scottish stations in the period under review. This species has, therefore, become unimportant in the economic sense, so far as Scottish fisheries are concerned nowadays. It was, however, not so long since an important object of Norwegian fishermen, and was hunted for its oil of fine quality, for its spermaceti; perhaps also for its skin for leather, and, it is also said, for "the ambergris, or a variety thereof, contained in its intestine, and formed, doubtless, as also in the Cachalot, as a by-product of the digestion of its cuttlefish food."

Lesser Rorqual—The Rorquals are called Finner Whales because of the possession of a dorsal fin, and one member of the genus (Sibbald's Rorqual) is the largest existing mammal on land or sea, attaining a maximum length of about 100 feet. The Lesser Rorqual rarely

LESSER RORQUAL

exceeds 30 feet in length, and is one of the four species which visit the seas off the British coast with any regularity.

For the most part these fin Whales, as we may call them, feed upon cod, but Mr. F. G. Aflalo says he has seen the Lesser Rorqual rounding up pilchards off the Dodman in Cornwall. It has a pointed muzzle, with the general colour of the upper parts greyish-black, and white underneath. It may, however, be identified with certainty by a prominent band of white on the upper part of the outer surface of the flippers. Because of the pointed muzzle, it is also known as the Pike-Whale. It is a solitary species, and follows a wandering course in search of prey.

Bottle-nosed Whale.—This species introduces us to the toothed Whales. They do not possess whale-bone, having instead permanent teeth in, at least, the lower jaw. There are other distinctive features in their anatomy, but these need not detain us. The Bottle-nose is one of the four commonest Whales which becomes stranded on British shores. It is an inhabitant of wide, open seas, and its food is largely made of squids and cuttle-fish.

Unlike the Rorqual, the Bottle-nose is of gregarious habits, associating in schools made up of several individuals.

It has acquired its popular name from the elevation of the upper surface of the head above the rather short beak, and, in front of the blow-hole, into a rounded,

abrupt prominence. The female is the smaller of the two sexes, as, whilst she does not exceed 24 feet in length, the male may attain as much as 30 feet. An excessive development of the crest in the full-grown male at once signifies its distinct appearance from that of its mate.

The general colouration is light-brown above, with greyish-white underneath, but the young are black instead of light brown, and very aged specimens may be distinguished by their almost yellow skin, banded with white round the neck, and white is also present on the front of the head and beak.

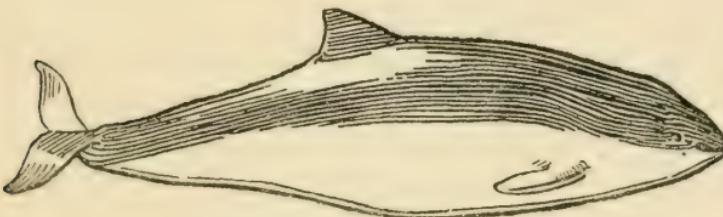
This species undertakes remarkable migration journeys in Winter from Northern to Southern seas, is most faithful in its effort to stand by a wounded comrade, of great activity of movement, and, when coming to the surface, protrudes the foreparts of the body well out of the water. As it descends to re-enter the water, it does so head first, instead of allowing its bulky form to fall helplessly into the sea, as in the larger Whales. Spermaceti, and an oil which is not unlike the valuable sperm oil obtained from the Sperm Whale, are yielded by the Bottle-nose, as much as two hundred weight of spermaceti, and two tons of oil, being obtained from an adult male.

It has the habit of remaining under water for long periods, blowing heavily on reaching the surface, and evidently hunting for food at great depths beneath.

Common Porpoise.—As one watches the Porpoises (Fig. 25) patrolling close to the shore in the early days of

COMMON PORPOISE

Autumn, when our annual visits are made to the coast, one invariably expects every moment to obtain a better view of the interesting beasts as they roll their torpedo-shaped bodies through the waters of the sea. When following shoals of mackerel, or other fish, it is an engaging sight to watch these smaller cetaceans thus occupied ; but, as has been hinted, one is never satisfied with the observance, and there is always a longing to obtain a better conception of exactly what the creature



Common Porpoise.

Fig 25.

looks like when in its native element. We see specimens occasionally which have become stranded upon the shore, or caught in the fishermen's nets, the owner reaping a small harvest from the pennies he collects as a result of his invitation to see the "Porpus-pig, sir !" Porpoises and Dolphins belong to the family *Delphinidae*, which contains more species than any other existing *Cetacea*. All are of small or medium size, having, with one or two exceptions, teeth in both the upper and lower jaws. As a rule, they are frequenters of marine waters, but a number tenant estuaries, and make their way up

tidal rivers, whilst there are a few species among them which can almost be regarded as fresh-water inhabitants. The remarkable Narwhal, the male of which is the possessor of an enormous spirally-twisted tusk in the upper jaw, belongs to this family, but it is rarely seen off the British Isles, as also is the Killer, or Grampus, which is one of the largest and most ferocious of the Dolphin family. The Common Porpoise is the best known of all the cetaceans which present themselves in our home seas, and it is more frequently seen because it so often comes close inshore, and will also ascend rivers. When the animal is gambolling in the water, the triangular large fin on the back is protruded above the surface. The body is dark slate, or blackish, on the upper parts, with pure white underneath. It is believed to feed entirely upon fish, such as Mackerel, Herrings and Pilchards; but it is also accused of taking Salmon, and probably ascends rivers for this purpose. It is of social disposition, shoals or herds of considerable size associating together, and when thus seen, their movements cannot fail to excite all those who are interested in the wild life of the mighty deep.

Common Dolphin.—This, the last mammal with which we are concerned (Fig. 26) is characterised by the long beak, elongated back-fin and flippers, slender body, small head, with a double array of sharp teeth in the upper and lower jaws, running from forty to sixty-five on each side.

It is the best-known representative of the true Dolphins,

COMMON DOLPHIN

and it is stated on good authority that there is little doubt this species (*Delphinus delphis*) is the one known to the ancients, though, as might be expected, some of its likenesses, and the stories connected with it, are more fanciful than real. As with its relatives, it associates in shoals, and exhibits the same playful habits, seeming to revel in its element, and passing much of its time in company with its fellows gambolling and frolicking in sheer delight. As a rule, the back is dark grey, with



Common Dolphin

Fig 26.

white or whitish under-parts, and bands of grey, or fulvous, on the flanks. It measures about $7\frac{1}{2}$ feet in length.

A single young one is produced at a birth, and as with the larger monsters belonging to the *Cetacea* Order, the offspring is tended with great solicitude and care.

We here take leave of our mammal studies so as to devote attention to feathered bipeds in our second volume, hoping that what has been written will prove entertaining reading, and lead the young enquirer to pursue his Natural History observations with increased zest and interest.

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